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TWELFTH ANNUAL REPORT

Oregon State Horticultural Society

THIRTY-FIFTH ANNUAL MEETING

EUGENE, OREGON

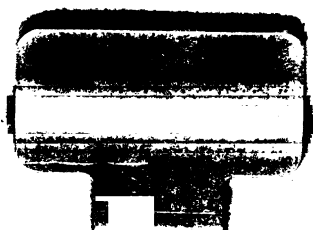
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Twelfth Annual Report

THIRTY-FIFTH ANNUAL MEETING

OF THE

Oregon State Horticultural Society

DECEMBER 2-3-4, 1920

EUGENE, OREGON

ORGANIZED 1885

INCORPORATED 1901

Salem, Oregon:
THE PACIFIC HOMESTEAD
1921



CONTENTS

Amended Articles of Incorporation	8- 9
Amended By-Laws	10- 12
Financial Statement	21- 22
Index	3
Officers, Committees and Members	4
Proceedings of Thirty-fourth Annual Meeting.....	13-100
Secretary-Treasurer's Report	19- 20

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INDEX

Address of C. I. Lewis	37
Adjourned Meeting	100
Address of President J. O. Holt	15
Address of Welcome by Rev. Spangler	13
Amended Articles of Incorporation	8
Amended By-Laws	10
An All-Star Prune Orchard	96
Annual Members	5
Board of Trustees	4
Committees	4
Diseases of Prunes	61
Filbert Culture in the County of Kent, England	47
Financial Statement	21
Greetings from Oregon State Board of Horticulture	14
Historical Sketch of the Society	23
Honorary Members	5
Life Members	5
Market Conditions, Past, Present and Future	43
New Prunes for the Willamette Valley	84
Officers	4
Orchard Fertilizing—Profitable or Otherwise	70
Plan of Work for Project No. 8 on Fruit Growing	78
Prune Driers and Drying	92
Reading of Minutes	19
Report of Meeting	13
Report of Secretary-Treasurer	19
Resolutions	82
Response by Henry E. Dosch	13
Saturday, December 4, 1920	59
Strawberry Culture in the Willamette Valley	26
The Strawberry for the Canner	33
The Story of Edward Coates, the Prune Idealist	86
White Pine Blister Work in Oregon	52

Oregon State Horticultural Society

Officers and Committees

Officers

EARL PEARCY, President, Forest Grove
ALBERT BROWNELL, Vice-President, Portland
C. D. MINTON, Secretary-Treasurer, Portland

Board of Trustees

CHARLES L. McNARY, One Year, Salem
J. B. PILKINGTON, Two Years, Portland
HENRY E. DOSCH, Three Years, Hillsdale

Auditing Committee

ALBERT BROWNELL
C. A. BURT
J. B. PILKINGTON

Committee on Needed Legislation

ROBERT C. PAULUS, Salem
CHAS. A. PARKE, Salem
A. H. MARSH, ROSEBURG
IRA HUTCHINGS, Corvallis
L. T. REYNOLDS, Salem

Members

Honorary Members

Atwell, H. C. (1911), Forest Grove.
 Cardwell, Dr. J. R.* (1897), Portland.
 Dosch, Henry E. (1911), Hillsdale, Portland.
 Lake, E. K. (1892), Pomological Dept., Washington, D. C.
 Lambert, J. H.* (1895), Portland.
 Luelling, Seth* (1895), Milwaukie
 Miller, H. B., (1911), 509 E. 21st St. N., Portland.
 Smith, E. L. (1911), Hood River.
 Starr, James E.* (1893), Portland.

*Deceased.

Life Members

Anderson, Nils P., McMinnville.
 Armstrong, E. C., Salem.
 Bateham, A. P., Portland.
 Better Fruit Pub. Co., E. H. Shepard, Hood River.
 Bridge Horticultural Society, Bridge, Coos County
 Brownell, Albert, Sargent Bldg., Portland.
 Bower H. A. Eugene.
 Brumfield, J. T., Portland.
 Bryant, Hub, Albany.
 Carter, J. L., Hood River.
 Central Horticultural Society, Coquille.
 Chase, W. E., West Ave. and E. Burnside, Mt. Tabor, Portland.
 Clark, L. E., Hood River.
 Coos Bay Fruit Growers' Association, Marshfield.
 Cordley, A. B., Dean, O. A. C., Corvallis.
 Daugherty, Otis Ray, R. F. D. 1, Molalla
 Davidson, Frank L., Hood River.
 Davidson, P. S., Hood River.
 Eggert, Mrs. Fred'k, 205 14th St., Portland.
 Elliott, Wm., Dallas.
 Esterly, H. M., Yeon Bldg., Portland.
 Fanning, A. M., Sheridan.
 Fargo, G. K., 83 Fifth St., Portland.
 Forbis, John F., Dilley.
 Goodrich, A. C., *Yamhill.
 Groner, Ferdinand, R. F. D. 2, Hillsboro.
 Gibson, R. D., R. F. D. 5, Salem.
 Gale, H. E., Merlin.
 Holaday, Asa, Scappoose.
 Holt, J. O., Mgr. Eugene Fruit Growers' Association, Eugene.
 Howe, Ed. L., Multnomah Hotel, Portland
 Johnson, J. Lewis, Eugene, Box 69.
 Laidlaw, W. A., 1515 Belmont St., Portland.
 McCargar, C. A., Yeon Bldg., Portland.
 McDonald, M., Oregon Nursery Co., Orenco.
 McGill, A., Beck Bldg., Portland.
 McNary, U. S. Senator C. L., Salem.
 Marcum, C. A., care Portland Hotel, Portland.
 Mason, Julius L., Hood River.
 Meier, Julius L., care Meier & Frank, Portland.
 Minton, C. D., Portland.
 Moulton, L. D., McMinnville.
 Myrtle Point Horticultural Society, Myrtle Point.
 Newell, W. K., Portland.
 Park, Chas. A., Salem.
 Paulus, R. C., Salem.
 Percy, Earl, Dilly.
 Pemberton, John, Salem.
 Pilkington, J. B., Portland.
 Power, Frank W., Oregon Nursery Co., Orenco.
 Quarnberg, A. A., Vancouver, Wash.
 Rees, J. H., Springbrook.
 Reuter, Tillman, Madras.
 Reynolds, L. T., Salem.
 Roberts, E. C., Lebanon.
 Rumbaugh, H. G., Albany.
 Settlemeier, Frank W., Woodburn.
 Deceased, 1914.
 Swallow, C. W., R. F. D. 3, 118, Oregon City.
 Wallace, F. W., McMinnville.
 Weber, R. H., The Dalles.
 Westerlund, J. A., Medford.
 Williamson, H. M., Secretary State Board of Horticulture, Portland.
 Deceased, 1917.
 Williamson, W. E., Portland.
 Deceased, 1917.

Annual Members 1921

Allen, A. C., Medford.
 Barnett, J. D., Eugene.
 Bars, H. P., Corvallis.
 Beebe, J., Eugene.
 Beker, M. B., Yakima, Wash.
 Bennett, A. B., Hood River.
 Brown, W. S., Corvallis.
 Bouquet, A. G. B., Corvallis.
 Brenner, Frank, R. F. D. A., Eugene.
 Calkins, W. W., Eugene.
 Chase, F. B., Eugene.
 Conoration, Ward Lea, Rockford, Ill.
 Currin, H. W., Drain.

Davis, W. H., 939 Mallory Ave., Portland.
 Davis, Geo. E.
 Dencer, Edward, Salem.
 Dixon, J. H., 935 Patterson
 Dorris, Ben, Eugene.

Funk, H. G., Sheridan.

Harlow, M. H., Eugene.
 Harlow, T. B., Eugene.
 Halfer, E. C., Eugene.
 Hobbs, Harry, Eugene.
 Hutchings, Ira, Corvallis.

Jardine, J. T., Corvallis.

Kletzing, W. B., Eugene.

Larsen, James.
 Launsberry, G. W., Astoria.
 Lewis, Jno. E., Roseburg.
 Lennon, C. C., O. G. P. C., Medford.

Marsh, G., Roseburg.
 Merriman, C. A., Eugene.
 Miller, F. W., Motor A., Eugene.
 Miller, H. G., Eugene.
 McAllister, Frank, Eugene.
 McGee, Orenco.
 McMiller, Kenneth C., Sheridan.

Needham, Frank, Eugene.
 Newman, Wm. H., R. F. D. 2, Springfield.
 Nielson, J. P., R. F. D. A, Box 218, Eugene.
 Norton, F. J., Sutherlin.

Olmstead, F. A., Hood River.

Renner, J. H., Portland.
 Rebham, Ira F., Eugene.
 Roberts, Will, Eugene.
 Robbins, H. A., R. F. D. 2, Eugene.

Savinis, T. A. Jr., The Dalles.
 Schnister, C. E., Corvallis.
 Shannahan, R. E., Dundee.
 Stewart, C. E., Eugene.
 Storet, M. A., Sheridan.

Threaner, John, Eugene.
 Thompson, W. E., Creswell.
 Torry, Clayton L., Corvallis.

Walton, Wilmer, Motor A., Eugene.
 Waite, F. L., Eugene.
 Weatherspoon, H. H., Elgin.
 Widmier, Geo., Eugene.

Zimmerman, Geo., North Yamhill.

Annual Members 1920

Ayers, E. L., Junction City.
 Amoth, H. L., Newberg.
 Armstrong, Harley, Freewater.
 Astoria Chamber of Commerce, Astoria.
 Alexander, J. D., R. F. D. 4, Salem.
 Allen, A. V., Astoria.
 Arp, Max, Eugene.

Barss, H. P., Corvallis.
 Baker, W. B., 469 Everett St., Portland.
 Bellman, E. L., Eugene.
 Bouquet, A. G. B., Corvallis.
 Booth, J. H., Roseburg.
 Brown, W. S., Corvallis.
 Brown O. V., Blind Slough, Astoria.
 Bremner, Jas., Astoria.
 Brunhall, W., Curtis.
 Butterfield, I., Blind Slough, Astoria.
 Butterfield, J., Blind Slough, Astoria.
 Butner, Foster, Roseburg.
 Branman, D. K., R. F. D. 2, Salem.
 Barnard, Chas. W., Eugene.
 Braden, Winnie, Portland.
 Brown, A. L., Astoria.
 Bowlby, J. Q. A., Astoria.
 Berswick, Lars, Astoria.
 Brown, C. S., Astoria.
 Butcher, E., Astoria.
 Brenner, James, Astoria.
 Beebe, J., Eugene.
 Brown, C. V., Astoria.
 Butterfield, J. H., Astoria.

Childs, Leroy, Hood River.
 Chase, F. B., Eugene.
 Clatsop Cranberry Association, Astoria.
 Clarke, H. H., Central Point.
 Covitch, Martin F., Astoria.
 Cooley, S. D., Roseburg.
 Cornelius, Judge Scott, Astoria.
 Currin, C. J.

Campbell, J. C., Sutherlin.
 Carpenter Bros., R. F. D. 3, Salem.
 Coolidge, A., R. F. D. 3, Salem.
 Campbell, Dugold, Eugene.
 Carlson, Leb., Astoria.
 Carlson, Andrew, Astoria.
 Crossant, J. W., Lynes.
 Calkins, W. W., Eugene.

Dearborn, G. A., Dundee.
 Duncan, Edw., R. F. D. 3, Salem.
 Dunbar, Albert, Astoria.
 Danz, S., Astoria.
 DeLap, J. W., R. F. D. 2, Salem.

Ewing, A. E., R. F. D. 1, Box 25, Salem.
 Esiman, F. D., Rogue River.
 Eddy, B. L., Roseburg.
 Edlefsen, Wm. S. A., Lorraine.
 Erickson, Olaf, R. F. D., Astoria.
 Extrom, H., Astoria.

Frye, John.
 Fisher, Fred, R. F. D. 2, Roseburg.
 Fellows, A. A., Salem.
 Fostrom, Dr. T., Astoria.
 Frantovich, L., Astoria.
 Flavel, Capt. Geo., Astoria.

Goodrich, Luke, Eugene.
 Gallaher, S. M., Astoria.
 Gill, R. W., Portland.
 Gillsdorf, Turner.
 Gralapp, H. H., R. F. D. 8, Salem.
 Gratke, John, Astoria.
 Franciscovich, Martin.
 Gilbert, Philip, Salem.
 Gibson, G. W., R. F. D. 1, Salem.
 Grico, L., R. F. D. 2, Salem.
 Geer, R. W., Astoria.
 Gootling, O., Astoria.

Gray, E. B., Astoria.
Grimberg, A. G., Astoria.
Gordon, S. S., Astoria.
Gilmere, Patrick, Astoria.
Grayham & Watt, Astoria.
Griffin, J. N., Astoria.
Gallagher, S. M., Astoria.
Gootling, A., Astoria.
Grosbeck, Van, Cresswell.

Harvey, Joe, Roseburg.
Harlow, T. B., Eugene.
Halfer, H. R., Astoria.
Henderson, G. P., Roseburg.
Hoyt, C. D., Hood River.
Hane, C. J., Roseburg.
Hatchings, Ira, Brownsville.
Hansen, Otto, Salem.
Harlow, M. H., Eugene.
Harlow, Frank, Eugene.
Hines, Geo., Portland.
Hadley, W. J., Turner.
Hildebrant, August, Astoria.
Higgins, O. B., Astoria.
Halderman, Chas., Astoria.
Hanlin, Frank, Astoria.
Hesse, Frank C., Astoria.

Jessup, I. M., Cooks, Wash.
Johnson, K. F., R. F. D. 1, Astoria.
Johnson, J. E., Astoria.
Jaloff, A., Astoria.
Johnston, P. H., 545 East 23d St. North
Portland.

Kenin, S. B., Astoria.
Kullunkl, Walter, Astoria.
Kletsinger, W. A., Eugene.

Leahy, T. A., Astoria.
Lechner, H. J., Astoria.
Leinenweber, Frank, Astoria.
Lewis, C. L., Corvallis.
Lewis, Jno. E., Roseburg.
Lily, D. G., Forest Grove.
Lounsbury, G. W., Astoria.
Leukanuan, J. H., Astoria.
Lenthal, Sam., Astoria.
Lourin, T. F., Astoria.
Lechner, H. J., Astoria.

Madison, W., Astoria.
Morton, H. F., Sutherlin.
Marsh, Geo., Lookingglass.
McGregor, W. F., Astoria.
Mullen, E. P., Milton.
Murdick, L. S., Brooks.
Mathews, Sam, care Gardner Hotel, Far
go, N. D.
Maris, Paul, Corvallis.
Miller, Frank, Eugene.
Mehan, Frank, Eugene.
Moore, Delbert, Astoria.
Morgan, L. M., Astoria.
Madison, William, Astoria.
Matherson, Enoch E., Astoria.
Moore, J., Astoria.
McKail, M. J., Astoria.

Needham, Frank, Eugene.
Nelson, August, Astoria.
Nelson, Martin, Astoria.

Ostrom, J. A., Astoria.
Ostrom, A., Astoria.
O'Connell, J. H., Astoria.
Olsen, Ben S., Seaside.

Parson, Reginald, Seattle, Wn.
Percy, Knight, Salem.
Perrin, H. W., Drain.
Patton, Frank, Astoria.
Peterson, O. I., Astoria.
Pentilla, John, Astoria.

Reith, John, Astoria.
Rosenberg, O. C., Astoria.
Russell, E. H., Wilber.
Roman, J. E., Astoria.
Ross, J. T., Astoria.
Rosenberg, Dr. C. C. C., Astoria.

Scanbuong, Dr. L. A. Eugene.
Smith, W. G., Wolf River.
Spexarth, A. G., Astoria.
Sheppard, Fred, R. F. D. 2, Salem.
Scott, John M., S. P. Co., Portland.
Shaw, C. L., Portland.
Smith, W., Grays River.
Sherman, W. A., Astoria.
Staples, Norris, Astoria.
Stevens, Mrs. H. C., Astoria.
Schroder, J. B. C., Astoria.
Schmidt, Chris, Astoria.
Seeborg, Victor, Astoria.
Steinbreunau, John G., Shaw.
Stunsberry, J. E., Portland.
Stewart, O. E., Cottage Grove.
Stearns, A. F., Oakland.

Tolz, Henry, Roseburg.
Thrane, John, Eugene.
Trye, John, Astoria.
Taylor, E. H., R. F. D. 4, Salem.
Trover, H. D., Salem.
Teter, B. D., R. F. D. 3, Salem.
Trick, T. D., R. F. D. Salem.
Thranmee, Jno, Eugene.

Van Anken, L. M., Roseburg.
Van Dusen, B., Astoria.

Waite, F. L., Eugene.
Waterhouse, John, R. F. D. 1, Warrenton.
Weatherspoon, H. H., Elgin.
Weed, Howard Everett, Braverton.
Weland, L. A., Roseburg.
Wise, Herman, Astoria.
Winston, H. A., Roseburg.
Worsley, Ben S., Astoria.
Wood, R. H. C., Roseburg.
Waite, F. L., Eugene.
Withers, T. O., Astoria.
Wise, Herman, Astoria.

Yothers, M. A., Medford.

Zong, James L., Astoria.

AMENDED ARTICLES OF INCORPORATION OF THE OREGON STATE HORTICULTURAL SOCIETY

Know All Men by These Presents: That we, the undersigned, Homer C. Atwell, of the County of Washington; Frank W. Power, of the County of Multnomah, and James R. Shepard, of the County of Polk, all in the State of Oregon, being officers of the Oregon State Horticultural Society, unincorporated, and having been duly elected to the respective offices hereinafter specified, in accordance with the usages and regulations of said Society, do hereby associate ourselves together for the purpose of incorporation, under and by virtue of the general incorporation laws of the State of Oregon, relative to religious, literary, benevolent, charitable and similar societies; and we do make, subscribe and adopt, in triplicate, these articles of incorporation, to-wit:

1. The name assumed by this corporation, and by which name it shall be known, is Oregon State Horticultural Society; and its duration shall be unlimited.

2. The object, business and pursuit of this corporation is, and shall be, as follows: (1) The development of agricultural and especially of those branches known as horticulture, floriculture, aboriculture, and forestry; (2) the development of landscape gardening, and of all arts, sciences and instrumentalities likely to elevate the character of the rural population and increase the profits, comforts and pleasures of rural life; (3) the collection, preservation and dissemination of knowledge relative to the foregoing and other kindred subjects; (4) the exploitation and development of all agencies tending to conserve the natural resources of the country, and to arouse the public to an interest in such conservations; (5) to acquire, own, hold, use, sell, and otherwise dispose of and convey real and personal property; to accept, receive and use gifts, devices, legacies, bequests, and legislative appropriations; to borrow money, and execute therefor its promissory notes, mortgages and other assurances; (6) to do any and all other acts and things which may be necessary, advisable or convenient, for the purpose of more effectually accomplishing the purposes aforesaid, or any of them.

3. The estimated value of the property and money possessed by said Society at this time is one hundred dollars; and the sources of its revenue or income is, and will be, dues of its members, subscriptions, donations, devices, legacies, bequests and legislative appropriations, and any income which may be derived from the investment or use of any moneys or property so acquired.

4. The respective title of the officers making these articles are as follows: Homer C. Atwell, president; Frank W. Power, secretary-treasurer, and James R. Shepard, vice-president. They shall hold their respective offices until their successors therein shall be duly elected and qualified. Their successors in office shall be elected by a majority vote of the members of said Oregon State Horticultural Society who are in good standing and present, and voting, at an annual

meeting of said society on the first Tuesday of December, 1919; and on such other day and month of each succeeding year thereafter as may be designated in the by-laws of said society as the date of its annual meeting, said annual meetings to be held in the city of Portland, Oregon.

5. The location of said Society shall be in said city of Portland, in the County of Multnomah, and State of Oregon.

HOMER C. ATWELL, President,
J. R. SHEPARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer,

We, the undersigned, A. P. Bateham, president; E. H. Shepard, vice-president, and Frank W. Power, secretary-treasurer, of the Oregon State Horticultural Society, certify that at the annual meeting of the Society, held November 16, 1911, the following resolution was unanimously adopted:

Resolved, That the officers take the necessary steps to file amended Articles of Incorporation placing the legal powers of the Society in the officers and three trustees, in place of the officers alone, as at present.

In accordance with said resolution the following, to be known as Section 6 in the Articles of Incorporation will be appended as the amendment thereto:

"Section 6. The management of the affairs of the Society shall be vested in the president, vice-president and secretary-treasurer and three trustees. They shall be elected at the annual meeting each year, which shall be held at such time as may from time to time be fixed by the by-laws. The officers and trustees shall hold office for such time as provided from time to time in the by-laws."

Signed in triplicate and sealed with the seal of the Society this fifteenth day of October, 1912.

A. P. BATEHAM, President,
E. H. SHEPARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer.

Acknowledged before Notary Public.

**AMENDED BY LAWS OF THE
OREGON STATE HORTICULTURAL SOCIETY**

(Adopted November 20, 1912)

ARTICLE I—The Society Year.

The Society year shall begin on the first day of January.

ARTICLE II—Membership.

Section 1. The membership of the Society shall consist of annual, life and honorary members.

Section 2. Any person who shall pay the annual membership fee of one dollar shall thereby become a member for the current year, ending with the opening of the next annual meeting.

Section 3. Any person who shall pay the life membership fee of ten dollars shall thereby become a life member and shall be excused from further payment of membership fees.

Section 4. Any person who in the opinion of the Society has done the Society or horticulture in general some especially valuable service may be elected to honorary membership by a two-thirds vote of the members present at any regular meeting and shall be excused from payment of all membership fees.

Section 5. Those who were honorary members before the incorporation of this Society shall continue to be considered honorary members, without further action of the Society.

Section 6. All members shall be entitled to the same rights and privileges.

ARTICLE III—Officers.

Section 1. The officers of this Society shall be a president, a vice-president, and a secretary-treasurer, and three trustees. The last four shall be under bond in such sum as the Society may designate for the faithful discharge of his duties.

Section 2. The president and secretary shall be ex-officio members of all committees except the auditing committees.

Section 3. The duties of said officers shall be such as usually devolve upon like officers in similar organizations; provided, that no bills shall be paid without the approval in writing of the president and secretary-treasurer; and provided further that a committee of three, to be chosen annually by the Society, shall audit all bills, reports and accounts and render a report thereon to the Society.

Section 4. The secretary shall, at each annual meeting, render a report showing:

First—The personal property of the Society in his hands.

Second—The irreducible funds, securities and bills receivable belonging to the Society, stating how such funds are invested, and the interest then accrued on the same and on the other securities and bills

receivable. Said report shall cover all documents of permanent value or use.

Third—He each year shall render to the auditing committee a complete report of the cash receipts and disbursements for the preceding year and this report, together with the report of the auditing committee, shall be made a part of the proceedings and printed in the annual report.

Fourth—The premiums offered, and by whom offered, and what was the final disposition of same.

Section 5. The three trustees appointed by the Governor as a Board of Control of the state appropriation, together with the president and secretary of the Society, shall constitute an executive committee, which committee shall be empowered to transact any and all business of the Society that may be necessary between meetings of this Society.

The executive committee shall from time to time fix the compensation of the secretary of this Society as they may deem the requirements of the office may justify.

ARTICLE IV—Date of Annual Meeting.

The annual meeting shall be held on such days in November or December of each year as the officers may, from year to year, designate. The officers shall be elected on the afternoon of the second day of the annual meeting. The president, vice-president and secretary-treasurer shall take charge of their office on the first day of January next following their election and hold office for one year, or until their successors are elected and qualified.

The trustees shall be chosen in accordance with the Act of Legislature so long as an appropriation is given by the state, and unless otherwise provided therein shall hold office for three years. In case the legislature shall fail to grant an appropriation in any year, the trustees shall be elected for three years by the Society.

ARTICLE V—Other Meetings.

Section 1. Other meetings may be held at such times and places as the Society by vote at a previous meeting may designate.

Section 2. The president may call a special meeting at Portland by causing notice thereof to be mailed to each member at least five days previous thereto, such notice to state the object of such meeting.

Section 3. It shall be the duty of the president to call a special meeting whenever requested in writing so to do by fifteen or more members.

ARTICLE VI—Publications.

Every member shall be entitled, without cost, to one copy of all official reports published by the Society.

ARTICLE VII—Quorum.

Nine members shall constitute a quorum for the transaction of business, but a less number may meet, call to order, and adjourn from time to time.

ARTICLE VIII—Order of Business.

The following order shall be observed as a guide in the transaction of business at the annual meeting of the Society:

1. Call to order and reading of minutes of previous meeting.
2. Reports of officers.
3. Reports of committees.
4. Unfinished business.
5. New Business.
6. Election of officers.
7. Papers, addresses, etc.

ARTICLE IX—Rules of Practice.

Robert's Rules of Order shall govern the deliberations of the Society.

ARTICLE X—Irreducible Fund.

All life membership fees, together with the sum of \$2,000.00 of the amount heretofore realized from the bequest of the late Cyrus E. Hoskins, the "Lambert Fund," and the "Cardwell Fund," shall be kept intact and invested on good securities, so as to produce a revenue, if possible, and only said revenue shall be expended by the Society.

ARTICLE XI—Personal Property.

The secretary shall be the custodian of all badges, banners, dies, medals, blanks, books and other property of the Society of value or suitable for future use; and shall exact from his successor an itemized receipt for said property, when same is transferred.

ARTICLE XII—Record of Reports.

The annual reports of the officers and of the auditing committee and all reports relative to the finances, or property of the Society, or the disbursements of its fund, shall appear in full in the record of transactions, in the order of their filing with the secretary following the record of the meetings at which the reports were presented. The treasurer's report shall be made to the auditing committee showing a full report of receipts and disbursements and said report together with report of the auditing committee shall be made a part of the proceedings.

Said reports may either be pasted upon said record, or copied, in which latter case the copy shall be attested by the secretary.

ARTICLE XIII.

The executive committee may, if they deem it advisable, lend the assistance of the Society in any display of fruits and products of the state.

ARTICLE XIV—Amendments.

New by-laws may be adopted and old ones changed or repealed by a two-thirds vote of the members present at any meeting; provided, notice of such proposed adoption, change or repeal shall have been given at the last previous meeting of the Society; and, provided, further, that a vote to change or repeal Article X shall be by yeas and nays, recorded on the record book of the Society. Said vote shall be taken only at an annual meeting, and after due notice given at the annual meeting next preceding the same.

REPORT OF MEETING

THURSDAY, DECEMBER 2, 1920

The meeting was called to order by the President, Mr. J. O. Holt.

ADDRESS OF WELCOME

By Rev. Spangler.

I am unfortunate in one thing as I represent the Mayor and came here to represent him at the last moment and I know that you are disappointed in his not being present.

I am sure, were he here, he would bid you a hearty welcome to our city for we are to be congratulated on having your members here. He would welcome you to our city, our home the beautiful (We have to say that ourselves, but it is so anyway), and we hope that you will find it so, a pleasant place in which to stay while you are here with us.

I am really sorry that more interest is not taken in these meetings of the fruit growers in Oregon, for it is the one thing that characterizes us and distinguishes us from other localities in the East and the Middle West. It is a growing industry. I remember when your institution here was not nearly as large nor of as much importance as now, and its growth is certainly due to the management of President Holt and his fellow laborers.

So we welcome you to our city and cordially invite you to all of its places of interest. We welcome you in the name of the great institution, the University of Oregon where we have your sons and daughters under the instruction of able men and women. I am sure you will enjoy going about the grounds and visiting there if you have time between sessions. We have some other good things in the city. Of course you will visit the plant where we dry prunes and make cider (This last will interest some of you); and in behalf of the Mayor and in behalf of the citizens of Eugene, we want you to feel that the city is yours, and we want you to make the most of it while you are here. Call on us if in any way we may be able to serve you.

RESPONSE.

By Henry E. Dosch.

Mr. Mayor, Mr. President, Ladies and Gentlemen, Fellow Fruit Growers: We are very grateful and thankful for the cordial welcome that has been extended to us. I do not know why I was elected to answer to this unless it was because I am the only charter member of your society present. In fact, there are only five living now, the sixth is one of your good citizens, Dr. Sharples, who passed away

recently. And we have two who are standing on the threshold waiting to be called. One is Mr. H. N. Miller of Portland and the other Mr. L. E. Smith of Hood River (recently deceased—Ed. note).

While I was sitting here thinking my mind rolled back, way back thirty years ago. Dr. Cardwell whom we elected our first President, said, "Look here, friend Dosch, we will have to do something for horticulture in Oregon. We must form a society," and we did. We went around Portland and met about twenty-five growers, mostly novices in the business, and we met in Dr. Cardwell's office. We elected him our first President and kept him for twenty years. We grew little by little—and very little. We went down into the council chamber and were instructed by Dr. Cardwell and Mr. S. A. Clark of Salem on prunes; Mr. Lambert and Mr. Hoskins on cherries; Mr. M. H. Carson of Grants Pass on grapes, grape juice and wine; Mr. McGoon and Mr. Slauman on strawberries; Mr. Wallace on pears and then to myself fell the task of nut culture introducing the French walnut which has proved profitable to all of the state. And had it not been for the optimism of Dr. Cardwell and his American "go-ahead-itive-ness" the Society would have gone on the rocks. But we took courage and called on the State to help us out and they gave us the State Horticultural Board so that we would have something behind us. It was hard for the Society to keep alive the growers' interest in the work and a great deal of hard work has been done ever since. We called upon professors of the Oregon Agricultural College and they were always willing to lend a helping hand even up to the present day, so here we are. Look back thirty-three years when we started. See what has been done. So let the good work go on and not end.

I want to thank the representative of the Mayor for his very cordial welcome to a city where the very atmosphere is freighted with education and learning, and I think that I voice the sentiment of all present when I say that we will certainly enjoy your city's hospitality.

Mr. Newell:

We wish to extend an invitation to the members of the Horticultural Society in behalf of the University of Oregon to visit the University. There is a cherry tree of interest in front of the President's house, that never fails to have a good crop and the cherries are always ripe at the time of commencement.

GREETINGS FROM THE STATE BOARD OF HORTICULTURE.

By C. A. Parke.

Mr. President, Ladies and Gentlemen of the Oregon State Horticultural Society:

Again it is my privilege to convey greetings from the Oregon State Board of Horticulture to the Oregon Horticultural Society. It is with pleasure we look back and count the number of pleasant and profitable conferences we have had together. This is your thirty-fifth annual meeting. The Oregon State Board of Horticulture is thirty-two

years old this winter. The personnel of the State Board of Horticulture has always been taken from the membership of Oregon Horticultural Society. These annual meetings are more like the homecoming of the family. We are of your family and we are glad to come together at this Thanksgiving Season in the beautiful City of Eugene. Isn't it comfortable to come to Eugene and enjoy the glowing warmth of its hospitable fireplace? We are delighted to be welcome guests and we do enjoy the feeling of comfort and contentment in this atmosphere.

You have an interesting program for your three-day session, and I know that many of the subjects will bring forth other profitable discussions.

I want to tell you a few pleasant things. I want to tell you that the last Legislature replaced the appropriation for the Crop Pest Fund and that the Agricultural College will issue this winter its third Crop Pest Report. All of these reports are very profitable publications.

I want to tell you that some valuable constructive work has been done along the lines of pest control in finished food products by vacuum fumigation. Such food products as dried fruits, dried vegetables and cereals. This means the saving of a great loss in these lines.

It is also possible by this method of fumigation to kill the potato tuber moth in any stage of development.

The alfalfa weevil succumbs to this treatment. The Indian meal moth can be controlled. These are a few of many things that are being done by such people as are gathered here today. Men and women, who, regardless of money consideration, are going forward and solving problems that add greatly to the world's wealth. Isn't it fine that we have such people?

PRESIDENT'S ADDRESS.

By J. O. Holt.

Ladies and Gentlemen of the Oregon State Horticultural Society:

It is with pleasure that I welcome you to Eugene. For thirty-five years this Society has been closely identified with the development of the fruit business of the State of Oregon, yet this is the first time you have honored us with your presence. We welcome you to Eugene because we believe that we can show you something that will be of value to you. We have developed very much along the same lines as other parts of the State, but we have our own individuality. The fruit business of this part of the Valley has been to a large extent centralized and has therefore been developed in a systematic way. We invite you to visit our factories and our orchards while you are in our midst.

On the whole fruit growing has been profitable during the past two or three years. Prices opened up the fore part of this year at an extremely high level, but the crest had been reached and prices of fruits like those of other commodities stagnated, then were obliged to come down. Once the downward movement began it gathered force

because buyers do not care to operate on a falling market and there seemed to be nothing to do but stand aside and let this price cutting take its course. Most sellers have retired from the market because it seemed no matter what price was made the buyers would not be tempted. The wholesalers of the East are cleaning up their stores and borrowing from one another and, when they are obliged to, buying just enough for immediate wants, knowing full well that if they can wait long enough, they can buy their supplies at their own prices. If combinations of growers are strong enough and properly handled, this matter will right itself before becoming ruinous. The rapidly increasing tendency on the part of the growers to take into their own hands the selling of their products is much stronger than it ever has been before in all lines of products. This system of merchandising has made it necessary for the growers to provide their own factories, warehouses and storage plants. The old practice of selling our products to the speculator, as soon as ready to market at whatever price he was willing or obliged to offer, did not necessitate storage facilities. Goods were then immediately shipped out to eastern warehouses where for the remainder of the season they were handled just as the speculator saw fit and the conditions of the market permitted. The grower knows if he can size up the output of a certain article together with the demand, set his prices accordingly, get the products to the consuming public at prices which will enable it to buy the article before the next crop arrives and keep the public consuming as regularly as possible, that this is the only way to get the most there is in the product. Here at Eugene we have cold storage facilities for about 40 carloads of apples and also, if necessity arises, for a like amount of prunes. Medford can store 25 cars and Hood River plants can store around 400 cars at one time. I predict that before long large cold storage plants will be erected at Grants Pass, Roseburg, Salem, Portland and no doubt some other centers in the Willamette Valley, as well as eastern Oregon producing points.

By combining in manufacture a great deal of money is saved, as a large factory can operate to a better advantage than a smaller one. For instance, we have here an example to which we can cite you. We have three prune driers connected with our association. The actual cost of drying prunes at the large plant here at Eugene this season, counting overhead and all other expenses, was 1.9c while at the smaller plant at Junction City the cost was 2.8c and at the still smaller plant, operated at Creswell, the cost was 3.7c, showing a decided advantage in favor of the large plant. This large plant has sixty-three tunnels. The same thing holds true in other operations, as large fresh fruit packing houses can handle the fruit to a great advantage over the smaller units.

The damage caused by the extremely cold weather of last winter, was not confined to the sections which were not accustomed to having very low temperatures. My inquiries indicate that the damage was more or less general all over the state, altho it was more severe in the Willamette Valley than in any other section. I found whole orchards near Pendleton and up in the Walla Walla section which

were very badly damaged. In the lowlands near Hood River some of the older and weaker trees were killed outright while others were badly damaged. In the Willamette Valley the old home orchards seem to have been almost wiped out, the Baldwins, of which there will be a goodly number, having suffered the worst. It also practically ruined the peach industry of this valley, altho this was not a large commercial enterprise. A careful study of the damage shows that the money loss was more apparent than real. The orchards killed, altho traveling over the country, it looked as if there were a great many of them, were, as stated before, the old family orchards which cut little figure in the commercial crop, together with some cherry and peach trees and in some sections, some older commercial orchards of prune trees were badly damaged; but where the orchards were thrifty by being handled in an up to date manner there was little injury. It would be a good thing if pressure could be brought to bear on the people who have these dead orchards to have them removed quickly, as their presence gives a very bad impression to any one traveling across the country. Some of our well known and much praised fruit sections look very ragged right at the present time because of these dead or dying trees. The damage in Douglas County was not so great, and, so far as I can learn, is not considered very serious.

The Willamette Valley grew the biggest prune crop by long odds which was ever produced in this section of the country. It was of fine quality, but just at picking time the rains began and continued almost without cessation to the end. Estimates have been reduced from time to time, beginning with an estimated crop of 80,000,000 pounds along about the forepart of August; it was reduced to something like 25,000,000 pounds at last reports. However, it is probable that the estimate of 80,000,000 pounds in the beginning was too high. It is a wonder to me that we saved what we did. Some of the prunes, especially those which were on vigorous trees, stood up fine, going thru a week or ten days rain without cracking, altho they were ready to harvest. It has been called to my attention that there is an impression abroad in the trade that what prunes have been saved are more or less rain damaged. Every effort should be put forth to correct this impression because prunes which were saved and have not been split are just as good as if we had had perfect weather. We are suffering from the reputation of California again, wherein the prunes being dried in the open air will, during rainy and cloudy weather, ferment to a more or less extent, injuring the quality of the fruit. The same inclement weather that retarded the gathering of prunes also delayed the picking of apples which will to some extent at least injure their keeping qualities. In sections where Tokay grapes were grown the loss was very heavy. The grape industry we believe is destined to be one of importance in the State of Oregon. We certainly can grow a wonderful Tokay grape and we believe that our Concord produce the finest juice when properly handled of any on the market.

The rains caused considerable development of scab late in the

season. A good many apples are being packed with scab which will probably develop some trouble later on. Perhaps 50 per cent of the orchards of the State are bearing this year their first commercial crop. The full value of the fruit products of the State of Oregon should increase very rapidly in the next two or three years. Our prunes are still being set to the limit of the planters' ability to get trees. Pears are also being set in various parts of the State and are proving quite popular with orchardists. We believe that there are some varieties of fruits being neglected which should receive more careful attention. We believe that the western part of Oregon is especially adapted to the production of the best plums, both for shipping and for canning. Of course there is the objection that they are subject to brown rot, but we believe that this can be controlled. We think that grapes are worth considering in the proper localities.

A futile attempt was made at the last election to put a market bill on the statute books of the State. The intentions of this bill, in our opinion, were good, but fears developed among some people whom it was the intention of the bill to benefit that under certain contingencies the bill would work a hardship and perhaps even be a detriment to the best interests of co-operation. Then the general public only saw that this bill was creating another commission and the fact also that everybody was in a mood to vote "no" on all of the propositions which were up before them, caused the defeat of the measure. However, we are of the opinion that some form of co-ordination among the co-operative movements of the state of Oregon would be of great benefit. It would be of great assistance to the people who are wanting to be organized to have someone who was not personally interested in the matter to give them advice. Now the only source from which advice can be secured is the Agricultural College, and a good deal of this work they consider outside of their jurisdiction.

The matter of help in marketing the crops has become a serious one. Not only does help seem to be scarce, but it does not seem to be as efficient as it should be. A great deal of the help, for instance, in fruit harvest, cannery help, etc., comes from the school children of the state and it is our opinion that forces have been at work which are not only making for inefficiency of this help but are working ruin to many of our young people. One of these is the propaganda that is going abroad against the labor of minors. We think much of this agitation is misdirected and gets the idea abroad that children are too good to work. We believe that this is one of the elements causing the development of juvenile crimes at the present day. There have been more juvenile crimes committed in our cities in the last few months than we have ever known before in a like period of time. Perhaps the moving picture shows are partly responsible for it. I would not go on record as one of those who would say that we have not at the present time highly developed moving picture performances, but notwithstanding all of their good points, we believe that the suggestions which are taken from many of the performances do not have the right incentive. I wish that we could get more of the younger people at our horticultural meetings and that they could be prevailed upon to take part because we need them and they need the training.

I expect that from the tenor of these remarks you will brand me as a pessimist. I have just returned from a meeting of the Western Cannery Association at Chicago. The speakers at this convention dispensed optimism without stint, yet a little investigation showed that the pea, corn and tomato canners' troubles were far worse than those of the western fruit canners' as an Ohio delegate expressed the almost universal condition by saying, "Down our way we are long on optimism but short on warehouse room." I feel that it is not fictitious optimism that we want but the naked realities. Prices that are higher than conditions warrant are bound to be disastrous. The great need of the moment is some power capable of establishing an irreducible minimum beyond which prices cannot go. The seller wants it, the buyer wants it, the consumer needs it.

READING OF THE MINUTES OF LAST MEETING.

Mr. Dosch: As the minutes of the last meeting are in printed form, I move you that the reading of the minutes be dispensed with.

Motion carried.

REPORT OF SECRETARY-TREASURER C. D. MINTON.

We are again meeting at our annual conference to rehearse the experiences of the past, to give encouragement for the future, and to enlighten each other upon the subjects upon which we may have secured information that our other members have not.

This is the thirty-fifth meeting of the Oregon State Horticultural Society. A third of a century ago the organizers of this society builded better than they knew.

Only a few of the original charter members can be numbered among our membership. Colonel Dosch is the only member of the original group who organized the society who is with us today.

The value the society has been to the horticultural interests of the state cannot be measured. While it may be that it is not made up of a very large membership, there are scarcely any benefits that have accrued to the horticulturists of the state that have not been instigated by the Horticultural Society as a body. The past year has been one of remarkable joys and disappointments to the horticultural men of the western part of Oregon. He has had excellent prices in most part for his products, yet he has been unfortunate in losing a great quantity of his products by inclement weather at harvest time. Those who sold early received much better returns than those who sold later in the season, as there has been a downward tendency of prices since early in the summer. Until at the present there was practically no market for unsold products; however, this, we believe, will turn shortly and the markets will re-open after the opening of the new year, and after inventories have been made.

The Horticultural Society as a body has never taken an interest politically. However, there are some problems which we are facing at the present time that makes it incumbent upon us to get in closer

touch with our congressmen and bring to their attention the large imports of nuts and brined fruits which are being shipped into this country; and to take such steps as are necessary to make the importation of these goods into the United States sufficiently expensive that the growers of our country will not be harmed by these importations. The abnormally high prices that have prevailed in the United States for the past two years and the value of the American dollar compared to the European dollar has caused a strong tide of imports to be thrown into the American ports. Much of these are the products of the underpaid peasantry of Spain and Italy and must come into direct competition with the products of our own horticulturists.

The financial conditions of our Society are better than a year ago, and, with the assistance of the State for the printing of our annual reports, we have been enabled to live within our income, but it will be necessary for our legislative committee to see that this appropriation is not cut out at our coming Legislature, and to that end I would suggest a stronger legislative committee to give attention to this and other needs of the horticulturist locally, and also that this same committee take up with our national legislature laws for the protection of the horticulturists in the United States.

Horticulture, like clothing, changes in style. When your secretary became interested in the Horticultural Society it was largely devoted to the strawberry culture. Out of this developed the Strawberry Festival of Roseburg and Lebanon. From the strawberry culture the style changed to cherries, and from this developed the Annual Cherry Show at Salem. And once again the style changed to prunes, and, while we never yet developed the local Prune Show within our state, however, our sister state has a Prune Festival just across the river from Portland. Then following the big prune era, the style again changes to apples. The Horticultural Society put on one of the largest apple shows in the west. This has grown until it developed into the Land Products Show, which gave it a varied nature.

The present style in horticulture is berries. Up to the present time practically, horticulture has catered to the fresh and dried fruit interests. That is one reason of its many changes. Today it is entering upon an era of canned fruit interests. Large canneries are springing up thru the northwest, and millions of dollars are being paid to the horticulturists by the canneries, and the horticulturist of today who is planning wisely will plan to plant such products a portion of which may be marketed to the canneries of the state. And to this end before planting fruits of any sort a half hour spent with your local canneryman before planting will probably mean hundreds of dollars to you in your future markets.

Moved and carried that the report of the secretary-treasurer be accepted.

Mr. Dosch: I make a motion that the secretary be instructed to send a telegram to Mr. H. B. Miller, ex-President, at Portland, and to Mr. E. L. Smith of Hood River extending to them greetings and good cheer from this Society.

Motion carried.

Mr. Holt: Meeting is adjourned until Friday morning at 9 o'clock.

**FINANCIAL STATEMENT OF THE OREGON STATE HORTICULTURAL SOCIETY FOR THE YEAR ENDING
DECEMBER 31, 1921.**

Irreducible Fund.

Lambert Fund	\$ 100.00	
Hoskins Fund	2,000.00	
Cardwell Fund	168.50	
Oregon Apple Growers Fund	40.00	
Life Memberships	635.00	\$2,943.50

Invested as follows—

U. S. Liberty Loan Bonds, 4 per cent	\$2,500.00	
U. S. Liberty Loan Bonds, 4½ per cent	350.00	
Ladd & Tilton Bank	93.50	\$2,943.50

Irreducible Fund Receipts—

Life Memberships	\$ 30.00	
Donation Oregon Apple Growers	40.00	\$ 70.00

General Fund Receipts—

Balance on Hand Last Report	\$ 910.03	
Interest on Bonds	112.48	
Annual Memberships	63.00	\$1,085.51
Total		\$1,115.51

Disbursements—

Portland Trust Co.	\$ 10.00	
Oregon Statesman	6.12	
J. L. Hartman Co.	7.50	
Washington County News-Times	17.75	
Irwin-Hodson Co.	24.50	
Grace Walker, Stenographer	25.00	
Portland Trust	10.00	
H. C. Brown & Co., Printing	15.00	
Ladd & Tilton, Exchange51	\$ 116.38
Balance		\$1,039.13

Trial Balance.

Cash on hand	\$1,039.13	
Loss and gain		\$1,048.48
Lambert Fund ..		100.00
Hoskins Fund		2,000.00
Cardwell Fund		168.50
Life Memberships		635.00
Oregon Apple Growers Fund		40.00
Government Bonds	2,850.00	
Supplies	9.35	
Due Irreducible Fund from General Fund	93.50	
		<hr/>
	\$3,991.98	\$3,991.98

We, your committee duly appointed to audit the books and accounts of Mr. C. D. Minton, the secretary-treasurer of the Oregon State Horticultural Society, hereby certify that we have this day examined all books and records submitted to us and find the same in order in every respect covering the year ending December 31, 1920.

We also certify that the cash on hand, as shown by the Trial Balance is on deposit with the Ladd & Tilton bank, and we have had exhibited to us U. S. Liberty bonds to the aggregate sum of \$2850.00.

Dated Portland, Oregon, May 27th, 1921.

E. A. BURT,
J. B. PILKINGTON.

FRIDAY, DECEMBER 3, 1920

The meeting was called to order by the President, Mr. Holt.

Mr. Holt: The first number this morning is a paper by Mr. Homer C. Atwell, "Historical Sketch of the State Horticultural Society."

HISTORICAL SKETCH OF THE SOCIETY.

By Homer C. Atwell, Forest Grove.

Owing to insufficient time at my disposal, I have not been able to make an exhaustive research among the annals of this society. The consequent loss to history may, perhaps, be compensated by gain to you.

George Himes once said that he spent three days searching for the origins of this society, but found records of only occasional meetings prior to 1885, with good old (not so very old then, either) Dr. Cardwell presiding.

November 17, 1885, was the date of organization of the society on a permanent basis, according to the investigations of H. M. Williamson, for many years editor and publisher of the Rural Northwest, and later, to the time of his passing, secretary of the State Board of Horticulture. Mr. Williamson was a man whose industry and care as an investigator entitle his opinions to great weight. Our society sanctioned the view of Mr. Williamson by designating its 1910 annual meeting as the "Twenty-fifth Annual Meeting" and quarter-centennial celebration of the Oregon State Horticultural Society.

Assuming the year 1885 to have been the correct date, the organization of the society antedated the creation of the State Board of Horticulture by a little over three years. The Board was the direct result of pressure brought to bear on the Legislature by the society, to provide some official agency for the protection of the infant industry of Oregon horticulture. The two organizations have ever since worked harmoniously to promote and protect the horticultural interests of the state.

In 1885, and for many years both before and after that date, Oregon horticulture was in its amateur and experimental stage. Nevertheless those who were feeling out the horticultural possibilities of the new country were full of enthusiasm and hope, inspired by the rosy prospects which genial climate and a rich soil suggested. Theirs was the spirit of the pioneer and original investigator, in which considerations of financial gain to themselves had small place. Considerable progress had been already achieved prior to 1885, in establishment of small orchards and development of new varieties by men who were original members of this society.

In an age of commercialism when men think in terms of electricity and gasoline and limit their literary excursions to their ledger and bankbook, it is refreshing as well as stimulating occasionally to devote

a thought to those slow-going, painstaking and self-sacrificing men who laid the foundation of our prosperity. To this class belonged the Luellings who ox-teamed from Iowa to Clackamas County in 1847 and established a pioneer nursery there. One of the brothers, Seth Luelling, was an organizer of this society. His memory should ever be cherished as the originator of the Black Republican and Bing cherries. J. H. Lambert gave us the Lambert cherry. Cyrus Hoskins (of whom I shall again speak), the Hoskins cherry. These practical horticulturists, co-operating with Dr. J. R. Cardwell, Dr. O. P. S. Plummer, Col. Henry E. Dosch, E. L. Smith, E. H. Skinner, E. W. Smith, H. B. Miller, E. R. Lake, H. M. Williamson and others, were the active spirits of our society in its earlier days. Dr. Cardwell came to Oregon in 1852 via the overland ox-team flyer. For many years he was a prominent dentist in Portland and spent a good fortune in experimental horticultural work. Upon the organization of our society he became its president. This position he filled with distinction and general satisfaction for twenty-two years, voluntarily relinquishing the gavel in 1907. The secretary of the society, from its organization to 1909 was the genial and energetic Prof. E. R. Lake.

Our society was responsible for the inception of the annual rose show at Portland, President Cardwell having appointed the committee which held the first show in 1893.

The year 1909, being the year before our quarter-centennial, marked an event of considerable importance to our society and led to its incorporation under the state law. Mr. Cyrus Hoskins, to whom I have already referred, wishing to demonstrate his interest in horticulture and his confidence in our society, had bequeathed a portion of his estate to the society. In 1909 this bequest, in the shape of \$2500 in cash, became available to the society. By reason of his generous bequest the society is able to publish reports of its meetings, something it had never been able to do prior to 1909. The same year saw other accessions to our endowment fund, notably, by the sale of thirty-nine \$10 life memberships. This gave us around \$3000 as a permanent fund, which, though a modest sum, enhances our dignity vastly more than passing around the hat. The stunt, along that line, which our former secretaries annually performed, would ill befit our present rotund secretary. His long experience as a newspaper publisher unfits him for soliciting money.

Since 1914 the custom of holding the annual meetings of the society in Portland was abandoned and those meetings are now held in various communities where interest in horticulture insures the society a welcome.

I have here presented only a meager outline of the early horticultural history of the state—scarcely more than a name list. Careful reading of a more comprehensive record will disclose many interesting episodes, many heroic situations. It will afford a vivid demonstration of that sturdy, self-reliant, God-fearing manhood and womanhood which has blazed the path of American civilization from the Atlantic to the Pacific.

Had I the time, I would like to set forth in considerable detail,

the valuable labors of others who became active in the work of this society subsequent to its pioneer stage—men like E. H. Shepard and A. C. Goodrich, who have gone to their reward; men like your fellow citizen, W. K. Newell, and Chas. A. Parke, who are, happily, still with us, and who, as successive presidents of the State Board of Horticulture, have guided its deliberations for the past twenty years or more. I must, however, leave the horticultural records of these worthy laborers to be estimated by some future historian.

In closing, permit me to quote from a paper read by H. M. Williamson before our society at its 24th annual meeting: "The general nature of the work of this society has not changed. There is always need of organizations to work for better things, to stimulate higher ideals, and to foster and develop the best type of enthusiasm (in horticulture)—that which seeks what is best regardless of personal financial returns."

I thank you, ladies and gentlemen, for your considerate attention.

Mr. Holt: In years past I have had the privilege of visiting and attending some of the meetings of the Washington State Horticultural Society. I have attended meetings at Prosser, Yakima and Spokane and they were all lively meetings. And this morning we have with us Mr. Dean, secretary of the State Horticultural Society of Washington. We would like to hear from Mr. Dean with greetings from the association.

Mr. Dean: Mr. Chairman, Ladies and Gentlemen: It is a great pleasure for us to be here at this meeting of the State Horticultural Society and it is also a pleasure to sit here and listen to the talks and to hear the names of the people who have been responsible for the present organization and the position it holds in the great Northwest.

It has been a pleasure to visit the meetings of the State Horticultural Societies and a greater pleasure to meet the people at the different conventions not only here in Oregon but in the entire Northwest. We in the state of Washington follow along patterning after you and trying to take the good things you leave along the path for us to pick up and make our society one than can stand with yours. We gather inspiration from you and at our meeting in Spokane we hope to see a good delegation over there. We are having good help from the Agricultural College where there is a corps of men who have no equals. They have an experiment station that has been doing horticultural work that has no rival anywhere.

It is with these words that we say that we are glad we are here this morning to enjoy the talks and discussions but the greatest pleasure is to meet you good people and gather your good words of inspiration.

STRAWBERRY CULTURE IN THE WILLAMETTE VALLEY.

By Joseph Nibler, Woodburn, Oregon.

(Read by Mr. Minton.)

Mr. C. D. Minton, Forest Grove, Oregon.

Dear Sir: Your letter at hand asking me to give you my experience in growing strawberries and also the varieties which do the best, especially in the Valley.

In my experience—having grown strawberries for sixteen years—I find the best success with the following method:

First of all, I prefer a piece of ground that has been planted to corn or potatoes the preceding year and which has been kept free from weeds. After the crop has been harvested I plow it eight to ten inches deep, then I harrow and smooth it down good. I then mark my field similar to a corn field with a marker drawn by hand, having the rows thirty-six inches apart. After preparing my plants; that is, cut the roots to about two inches long and trimming most all of the old leaves off, I proceed to plant, using a common garden hoe with the handle about 18 inches long, setting the plants from twelve to sixteen inches apart. Insert the hoe in the ground to depth of four inches, draw the ground back a little, or far enough to insert roots, then use the hoe to push the soil on the roots, stepping on the soil at the base of the plant. I generally use a bucket to carry the plants in.

A person can plant from eight to ten thousand a day.

As to time of planting: If the soil is not too foul with weeds, I prefer to plant them from the twentieth of October to the first of December. If the ground is foul with weeds plant in the spring after the ground has been plowed and worked down again. I find that I have the best success with the following method of cultivating: If berries are planted in the fall, as soon as planted I cultivate them, if the soil is not too wet. In the spring as soon as the soil is dry enough I use a seven-inch John Deere plow, plowing the ground away and within one inch from the plant, but only about one-fourth to one-half inch deep while near the center of the row I plow about one and one-half inch deep. As soon as I begin plowing I have the weeds cleared out between the plants, then I harrow with a one-horse harrow working the ground back to the plants.

I cultivate my berry patch every week all spring and summer except during the time they are at their heaviest blossoming. Never cultivate more than two inches deep.

Strawberries and runners cannot be grown from the same patch. If they are, there will be no crop the following season.

In the sixteen years that I have grown strawberries I have grown twenty-eight different varieties, and I find that the Wilson, New Oregon, the Gold Dollar are the varieties that do best in the Valley. I consider the Wilson one of the best berries grown for canning purposes. The New Oregon is also a berry for canning and also suitable

for jam and preserves. In growing the Gold Dollar for the last fourteen years I find that they are one of the best berries grown for jams, preserves and barreling purposes. The Gold Dollar is the only strawberry that will jell. Its jell is equal to that of the currant. The average housewife prefers the Gold Dollar because it can be used for canning, jell, preserving and for jam.

Having had experience with the Ettersburg, I find them a total failure. I've had no experience with the Trebla, but the Marion County Fruit Inspector told me that altho they are a very heavy bearer, after they are picked twelve to fourteen hours they become leaky and turn dark.

I hope this will give you the desired information. If nothing happens I will be with you in Eugene December 2, 3, 4,

Yours truly,

JOSEPH NIBLER.

Mr. Holt: We are using strawberries in our own operations and have to go out into markets to get enough to use. This is a real live subject. Are there any other questions we would like to take up before we go on with the program?

Mr. Park: I wish to say that we are sending a great many strawberry plants to California and on November 18th they proclaimed a quarantine on all plants being shipped from a part of Oregon in the section of McMinnville and all plants must be examined. They quarantined against the plants on account of the strawberry root weevil. The only way to handle the problem in the territory is for the plants to be inspected and the growers given a certificate showing that the plants are free from the weevil.

After the quarantine in California one car had already been shipped and was held up because it could not be delivered. Now it behooves the growers to keep the fields clean and see that other men do not have infested fields. Everything will be done that can be done to get clean plants to California. We propose to send an inspector to every patch of strawberries where they are intending to ship and have the inspector certify that the plants are free from the weevil. Mr. Stewart, inspector of this County, knows something about strawberries and we would like to hear from him.

Mr. Stewart: We are growing many strawberry plants to be shipped over on the coast and I found a new pest, the eel worm, in the strawberry patches. One cannot imagine their destructiveness, as there is nothing any worse, nothing to compare with it. In that section of the coast they have big crops, producing berries from the 15th of May to the 10th of December and they are shipping now. They set out plants in January, runners start and are ready to pick in June continuing to December. You can take a Clarke Seedling anywhere over there, set it out and it blossoms and bears and don't quit at all. But the eel worms are being scattered by acres and acres and even inland from Florence into Douglas County about six miles.

We should always be careful about shipping plants from one place to another. They also attack the clover fields. Now the growers are going over their fields and if they find any infested plants they burn them.

Mr. Minton: Are they attempting to combat this?

Mr. Stewart: Yes, we have a man down there going over the district and they are making an effort to eradicate the pest. It was not known in North America until seven or eight years ago when it was discovered on Narcissus bulbs from Holland at Twin Falls, Idaho. They are so small that they could never get out of the country unless they were carried on the plants.

Mr. Hutchings: I would like to ask the gentleman if he thinks that these pests might be overcome by fumigation.

Mr. Stewart: I think in Salem when Mr. McKee was demonstrating he said that he thought it was not possible to kill by fumigation because it is not on the outside of the plant at all.

Mr. Lemon: Could this be stopped by isolating the field where it started?

Mr. Stewart: No, I do not think so.

Mr. Holt: Is this land to which you refer hilly land or low land?

Mr. Stewart: It is hilly land.

Mr. Minton: Mr. Parke watched the control of this weevil. I wonder if he has any methods of controlling it.

Mr. Parke: I know of none whatever. The only way is to isolate those fields and to stop the growing of plants in that territory. The question was asked about fumigating these plants for controlling the pests. The eel worm is sometimes found in potatoes, a food that is largely consumed. I want to illustrate by telling an incident that happened less than two years ago. There was a carload of potatoes, White Rose potatoes, shipped from Los Angeles to Brooks. It was found that some of the potatoes were diseased with the eel worm and the car was sent back. They found that the eel worm could be killed by submitting it to a certain degree of temperature for four to eight hours, but it was impractical so the car was sent back. It seems that before shipping those potatoes Mr. Musser said that he personally inspected them and knew they were free. Oregon was discriminating against the California potatoes and they were going to make a test case, but he said that a friend of his came in with ten sacks of Victor potatoes and wished him to try them out and see what they would produce. He said, "Here goes a car to Oregon for that purpose. We will throw them in this car and try them out." Those ten sacks had the eel worm and they were the ones that resulted in sending the car back. The eel worm is so small that if it once gets into the soil you never can get it out. These potatoes were to be planted on land worth \$5000.00 an acre, and if they had ever gotten into the soil it would

have been almost impossible to get rid of them. I just tell you this to show you how bad it is to get such a thing started in the state.

Mr. Minton: Is there any one here who has had any experience with the Ettersburg 121 strawberry?

Mr. Holt: Mr. Taylor has grown them.

Mr. Taylor: I have had some experience with them for about eight or nine years and you know as much of what has been done as I do myself, possibly. I got some plants some eight years and tried them out in every way I could to see what was in the berry. It is a good bearer and yields the largest crops I ever saw. It is as good canning berry as we ever tried. Further than that, I have nothing to say.

Mr. Minton: There are such conflicting opinions on this berry that I don't know just where we are on the subject. Now near Forest Grove there are about five acres in one patch and I never saw finer looking plants in my life. I never saw as fine a lot of blossoms in my life, and never saw as few berries grown in my life. And that has seemed to be the experience of a number of people who have grown them. Then again, I find a man like Mr. Taylor who says that they are large croppers. I found a man at Gresham having success, but the berries grown on this field and on other fields around the Grove were small, insignificant in size and quality. I wonder whether it is a berry that does well in some sections and is of no value in others. The man who had this patch was going to plow it up, but I prevailed on him to let it grown another year and see if we could not thresh it out. There might have been some climatic conditions that destroy the blossoms, but at no time during the season did he have berries on that field that I would attempt to can or market at all.

Mr. Holt: I have had the Trebla and canned a few of them. The berries we canned were all right and stood up well, but this is only one experience. Mr. Nibler says they will not stand up long after being picked.

Mr. B. K. Schultz: Mr. President, I think I can add something on that subject. I had some correspondence with the Oregon Agricultural College and they told me they had made a test of the 121 and that it was a bi-sexual berry and showing that all the berries having a greater number of stamens seemed to fertilize all right but they could not fertilize the blossoms with fewer stamens. We are trying to work this out and later will give you a report on it.

Mr. Holt: We have a gentleman here who is a manufacturer and a seller of spray machines, and if you would like to hear from him we will have him on the floor and ask him a few questions.

Mr. Renner: Mr. President, Members of the Horticultural Society: In attending this meeting I feel that our interests are mutual. That upon your success depends our business. The perfection of the north-western grown fruits has not come about by chance. Only by the most scientific methods carefully applied have you reached this point.

We feel that we also have done our bit in bringing this about, as we have spared neither time nor effort in producing articles that would both lower your production cost as well as to enable you to produce more and higher grades of fruit. Therefore, your problems are our problems. It is to our mutual interest that we work together. I came here principally to learn of any new problems or conditions which you have, that we may better aid you in meeting them successfully. Therefore, I came rather as a listener than as a speaker. There is one thing I would like to tell you while I am here. It will at least give you food for thought.

Much has been said and written regarding the results obtained by using the spray gun, yet I have never seen a word written as to how to use one.

Mr. Black is very enthusiastic about the gun and reports excellent results. Mr. White says you could not hire him to use one in his orchard as they are no good. Why this difference of opinion? There may be two reasons. Either Mr. White did not have the same gun as Mr. Black or else he did not know how to operate it.

Recently I met a man who was very emphatic about the gun being no good. I handed him one of our guns with a five-gallon disc in it and which had 260 pounds pressure, from the sprayer, behind it and he soon changed his mind.

Do not condemn all the guns because you could not get results with one. There are several makes of guns on the market with large differences as far as results obtained and also as to ease of handling. In regard to operating, I will speak only of the Hardie gun.

Pressure is the primary thing in getting results. The amount of pressure depends on the height of your trees, also as to whether the wind is blowing or not. We have made numerous tests at different pressures and find that where the object to be sprayed does not exceed 15 feet from the nozzle, that 240 pounds gives you just as good a spray as 300 pounds. In spraying greater distances than this 240 pounds does not break the spray fine enough to enter the calyx cups or to cover the largest amount of surface with a minimum amount of liquid. Therefore, the higher your trees are the more pressure is needed. The same is true when the wind is blowing and you have to stand farther from the tree in order to avoid the spray blowing back on you.

On small trees or on the lower branches of large trees, it is only necessary to open the gun a trifle, which is accomplished by turning the handle to the left. As the distance from the nozzle to the place to be sprayed increases gradually turn the handle more. Five eighths of a full turn gives you the extreme range and should you not be able to reach the desired spot then increase your pressure. Be sure not to open the gun any more than is necessary to reach the point you want to cover and close the gun as the distance decreases.

If you could follow a minute particle of spray from the nozzle you would find that it would move forward in a spiral direction. When it reached the point where the air resistance is equal to the pressure

behind it there will be a sort of roll and it will float in the air. This results in a thoro covering of either a limb or an apple. This can only be accomplished by a finely atomized spray.

At one time I was showing the gun to a crowd of fruit growers when this point came up. I sprayed a telephone pole until it was dripping good. I was standing about fifteen feet from it. On examining it we found that it only lacked a few inches of covering entirely around the post. The second pole was sprayed from the same distance using about the same amount of water. On examining it we found that only the half next to us was wet. The first had been sprayed with the gun only open enough to well reach the post and the second the gun was wide open and spray going ten to twelve feet beyond the pole. If it had been an apple tree that spray would have been wasted and the results would have been unsatisfactory.

In regard to using the gun on calyx spraying, there is the same difference of opinion as I mentioned before even among our leading horticulturists. I have always contended that a Hardie gun properly handled would do just as effective work as any rod and nozzle, and can accomplish the spraying with less labor and liquid. However, as I said before, you must have the pressure to give you a very finely atomized spray.

There are different densities of water, from ice to the finest fog. If you would dip a calyx into a bucket of water you would get it all wet. A 100 per cent perfect spray. You, of course, cannot do that in an orchard, but you can take a high pressure and atomize that water. In other words, thin it down and entirely envelop the blossoms in a cloud of thin water long enough for the inside of every calyx to be thoroly coated with spray regardless of the angle in which they stand. This finely atomized spray will enter calyx that are closed too much for a coarser spray to enter and will therefore give you better results than driving spray which is nearly always a coarse spray.

Care should be used in handling the gun to see that you are not over shooting by having the gun too wide open and driving the spray beyond the blossoms instead of filling the area around them with a cloud of spray. You cannot cover the far side of an apple or the inside of a calyx with a solid stream of coarse spray shot from the ground. Much depends on the operator regarding material saved and effectiveness. I have known of some instances where there was 40 per cent saving on material, one man doing 70 per cent as much as two men with rods and nozzles. Other instances where one man did more work than two men but kept no record of material. My observations prove to me that one man with a gun will do 80 per cent as much as two men with rods and nozzles with a saving of bout 12 per cent in liquid.

Mr. Holt: The gun has become of great use to us in this part of the country and the mechanical application of spray is of interest to us at this time.

If there are no questions, we will take up the subject of nuts.

Mr. Parke: While we are talking about spray, I would like to call on Mr. Weatherspoon of Eastern Oregon, who is using dust spray for the control of the codling moth.

Mr. Weatherspoon: I have always used, prior to three years ago, in my orchard the old method of spray but it came to my knowledge that a new machine was being made for spray using dusting methods for the codling moth, also for winter spray. I have not tried the winter spray, but have tried it during the summer.

Now the dust spray is one of the late methods of spraying alfalfa fields. Three years ago I covered my orchard three times and each time it rained just after the cover was made so my labor was lost that year because the arsenate washed off and as a result I had one-third crop loss. Two years ago this new machine was recommended to me and a partner insisted that I buy it and take a chance on my entire crop of 50,000 boxes of apples. I took the chance and now use no other machine. I generally spray twice but I was taken sick just at the time of spraying and had to let it go and only sprayed once this year. It might be that you will find a worm in my apples once in a while, but they are very rare and there are no calyx worms this year. The machine was operated by means of a fan. I believe \$225.00 is the cost. You are thinking that the dust is going to blow away. Get that out of your heads.

You can cover the leaves thoroughly even when the wind is blowing or still. I am greatly encouraged that these people are progressing in the manufacture of this machine. We do not want to stick to the old methods to the detriment of ourselves but we should try out new methods worth trying out. I believe that the new method of dust spraying will take the place of the old machines and the man who uses it will find himself better off financially than before because it lessens your burdens and helps your bank account. And I feel satisfied in my mind that I will never be called upon to use liquid spray.

Mr. Parke: Mr. Smart has investigated the spray machines, etc., and anyone wishing to find out the results of his investigations can do so by writing to the Oregon Agricultural College.

Mr. Long: I would like to say a word about this dust spray. Professor Childs has been carrying on a close testing of this spray dust and liquid. I know from his experiments that this dust spray business is in an experimental stage and too much so for us to go too far, so before you sell your liquid outfit write to the Oregon Agricultural College and ask for the late bulletin of Professor Childs.

Mr. Weatherspoon: Don't get the idea that I am working for some spray company. I do not know Professor Childs and have not had much education, but common sense and my check book taught me what I have told you, and I gave it to you for what it is worth.

Mr. Dosch: I believe it is so well worth experimenting with that I make a proposition to give you a chance to experiment. If you will order one of your machines for me I will give it a good trial but will not sell my old one.

Mr. Weatherspoon: I have only told you my experience and that was with the codling moth. I am telling you from a purely business standpoint of a farmer who has to keep the matter of expense before him all the time in his production. Theories do not make money. I don't care what the Professor did or what he said about it. I know what I used.

Mr. Holt: Mr. Dean, will you please tell us what has been your experience in Washington?

Mr. Dean: This discussion is very interesting to me because we have been working on the codling moth control in Washington. We have places in Washington where they are using powder very successfully. In Yakima some are using the powder for controlling the codling moth with very good results. However, I do question the advisability of the new way entirely. In some valleys the air currents make it absolutely impossible to use powder. Those things present problems that we must take into consideration. Mr. Rebber has given a good description of the gun. We insist that for the calyx spray the rod and nozzle be used. After the calyx spray we do not care what they use but we do insist on the rod and nozzle for the first spray. In our valley when we have wind currents there are very few orchardists who are going to get up at two or three o'clock in the morning in order to get away from the wind currents and unless you have very clear conditions it is difficult to get 100 per cent efficiency.

Mr. Holt: The next number is "The Strawberry for the Canner" by Mr. W. G. Allen, Salem.

THE STRAWBERRY FOR THE CANNER.

By W. G. Allen, Manager Hunt Bros. Cannery, Salem.

Mr. Allen: Preface to paper: I think it was something like twenty-six or twenty-seven years ago when I attended the first meeting of the State Horticultural Society and while this is a little off the subject I cannot help but go back to it with a feeling that this organization has stood for the thoro investigation of all the different problems that come before it. The first part I ever took in the meetings was at Newberg about '95 or '96 when the greatest question before the people was the style and type of driers. How best to construct them to take care of the prunes and whether or not it was best to develop the sugar content in the prune after it had gone thru the drier. I tried to demonstrate in a little way the fact that starches could be converted into sugar.

I only bring this to you to point out the fact that from that time until this the Horticultural Society has stood for the best interests of the country. At the present time attention has been called to the great possibilities of berry production in Western Oregon. This question is one of very great importance.

The strawberry as it comes from the vine with its rich red color and delicate flavor is, without question, the most popular berry with

the American people. It grown in almost every State in the Union, being grown in a wider range of climate than any other berry. It probably has a wider distribution fresh and is consumed in greater quantities than any other berry.

Notwithstanding its popularity in a fresh state and its wide distribution, it has never been what might be styled a popular fruit in a canned state. The reasons for this are many, and while I will not be able to point out all of them, I do want to call your attention to a few and have us inquire as to the cause and see what can be done to make the strawberry more popular. We, as horticulturists and canners, are in the business we are in: to grow and preserve the best fruits possible, place before the public these fruits in a manner that will be as pleasing and beneficial as possible.

The strawberry probably changes more in the canning process than any other berry. The delicate flavor and aroma that makes it so popular in the fresh state is so changed and driven off by the heat that it is almost like another berry. If it was possible to retain the flavor and attractive appearance of the fresh berry in the can, the trade on canned strawberries would be many times what it is at the present time, and it is with these problems that we must work if we are to develop the business to anything like large proportions.

There were packed in the State of Oregon in 1919, 19,944 cases of strawberries and in Washington 19,484 cases. Oregon also packed about 2600 cases of strawberry preserves. I do not have at hand the record of the preserves packed in Washington, but you will see from these figures that the volume is not large, and, as a means of comparison, will give the statistics for other berries for the same year:

	Oregon	Washington
Loganberries	204,022 Cs.	66,624 Cs.
Blackberries	122,804 Cs.	253,992 Cs.
R. Raspberries	30,045 Cs.	100,385 Cs.
B. Raspberries	17,544 Cs.	7,027 Cs.

It will be seen by these figures that the pack of strawberries is much less than blackberries, loganberries, or raspberries. These have been produced in greater quantities than strawberries and are very much easier handled in the cannery than strawberries on account of the berries coming to the cannery practically ready to go into the cans, while strawberries have to be hulled and graded before being canned.

There are a few varieties of berries that free themselves from the cap or hull of the berry when being picked. The Ettersburg 121 will, when ripe, leave most of the hulls on the vine. This is a great advantage to the canner and if it were possible to get the berry delivered this way, it would make it possible to handle a much larger quantity in the canneries. At the present time it is almost as much work and expense in the cannery to hull the berries as the picking in the field. A good many of the varieties of strawberries grown in England are delivered to the canneries and preserve manufacturing plants without hulls, but we have never been able to get a variety that would give us satisfactory quality and have the hulls cling to the vines at picking.

Up to the present time there has been a demand for all the high grade strawberries that the canners could pack. What the trade wants is a strawberry of firm, fine flavor, uniform, medium sized, not larger than our average sized cherry, and of good, red color. The trade wants a medium sized berry for the reason that all the large berries shrink a great deal in canning and do not hold their shape. The grower can produce large sized berries cheaper than small ones, and the canner can handle them cheaper, but it seems to be a law of nature that quantity production is had only at the cost of quality.

Since we must pack the highest quality in order to sell our product and compete in the markets of the world, we must adopt this standard of quality, and, as horticulturists, must strive to grow berries and propagate varieties that will stand the test of quality.

There are more varieties of strawberries than all the varieties of all the other berries combined. Every community has a lot of different varieties, and it seems there is a variety somewhere that is suited to each locality and condition. Here in Oregon, where berries of all kinds do so well, we have a better opportunity to select the best and produce a better quality than in sections less favored.

Varieties of fruits, like people, seem to grow old and run out. We do not need to go very far back to remember what wonderful strawberries were the "Sharples," "Big Bob," "Jesse," "Wilson," and a lot of others, and of apples the "Genetin," "Rambo," "Parmain," and "Baldwin," but you do not see these varieties planted any more to any extent. The canning varieties of peaches in California are very different from the best varieties used a few years ago. They have some new varieties of mid-summer Clings that are being generally used, and it is with these varieties that California is holding her reputation as the best peach producing State.

There is a great room and a fascinating field of study and research in the propagation of new varieties of fruits and as much room for improvement as there is in the canning processes.

The Wilson strawberry has been the stand-by of the canners in the Willamette Valley for many years. Here in Eugene about fifteen years ago there was a lot of fine Wilson berries, and the cannery had about all it could take care of, but there are very few Wilson berries grown here at the present time. We had good crops of Wilson strawberries in the Salem district up to the last four or five years, but the yield is not what it used to be.

The Clark Seedling, which is grown almost exclusively at Hood River; while this berry is as fine a quality berry as we have ever seen, does not grow successfully any place west of the Cascade Mountains and is not a heavy cropper in Hood River. This is proven by the fact that while prices for fresh berries have been very high for fresh fruit shipment, the acreage there has not increased as it has in other sections. Marion and Polk counties now have twice the acreage in strawberries that Hood River has, notwithstanding the fact that the prices at the manufacturing plants have not been near so high as have ruled in the fresh market. I call attention to these facts because of the falling yields obtained from these old varieties.

It is therefore with interest that we turn to see what has been done with new varieties and what progress has been made along this line. If it is a fact that we cannot look for results from the old "Wilson" in the Willamette Valley, the "Clark Seedling" of Hood River, the "Marshall" of Vashon Island, the "Dollar" berry of the Sacramento Valley, or the "Klondyke" of Los Angeles, we must introduce new berries, acclimate them, and thus keep up the yield and quality so necessary to our success.

Albert Etter of Ettersburg, California, has probably done more to bring to us a new family of Strawberries than anyone else in recent years. He has propagated hundreds of new varieties of strawberries, some of which are being planted very freely. He has taken the wild strawberry of Humboldt county and crossed it with almost all the leading tame varieties and the result has been almost a new family of berries. Nearly all are strong growers, but vary a good deal as to quality and productivity.

The Ettersburg 121 has been planted very extensively and while the quality is wonderful, the plant large and vigorous, it has not generally proven a good yielder at all and generally a failure from this point of view. It is, of course, impossible to raise a variety with profit that will not yield a fair return.

The variety that at the present time gives promise of yielding the grower a good yield and produce a quality that must be had by the canner is the Trebla. This berry is a wonderful cropper. We have seen it produce at the rate of eight tons per acre. It is a strong grower, the plants are very hardy and seem to do well on all types of soil. It is fairly uniform in size, very deep in color if left on the vines, and holds its shape well in canning. It is a good table berry, not being quite as acid as the Wilson. While the quality is hardly equal to the 121, it has better color, but will show up more attractive than the Wilson, possibly not equal to the best Clarks of Hood River. It has a slight tendency to sunburn if the weather is hot at ripening time, but not bad in ordinary weather conditions. It is being planted very generally about Salem and by another year will produce about as many berries as any other variety. It gives more promise from all angles than any other berry that I know of. Other varieties may come later that will be better, and every grower should keep the ideal perfect berry in mind and try for its production.

The canner may not be able to take all the berries that are grown, but will handle a much larger quantity if the cost is within reach of the consumer and the quality the best that can be produced. The preserve plants used a large quantity of strawberries. Some of the large jobbers of the East report that almost 50 per cent of all the jam they distribute is strawberries, so that with all these outlets we should be able to market a much larger quantity of berries if we grow and pack only the best.

I would not have you think that all our problems are solved with the raising of a good strawberry. The canner has a lot of problems that he has not worked out. He has been working on the preservation of color for several years, and while the color can be held fairly

well, he has to have a good deal of color in the strawberry to make it attractive. The canner of all berries has the problem of making the berry hold without puffing, which it has a tendency to do if held more than one year, and it is sometimes necessary that the goods stay on the shelf that long and still when consumed be appealing to the consumer.

These problems, and many others, lack a lot of being solved, but it is not my purpose to discuss these troubles, but only to point out that while our canning industry is growing, we have a lot of problems to solve to the end that we as growers and canners can work together to accomplish the most for our State.

If we can produce the quality and deliver the flavor of the fresh Oregon strawberry to the consumer, we need have no fear of over production, and it is to this end we should all try and grow the best berry, pack and preserve it in the best possible way, and deliver it to the consumer with all the freshness and beauty of Oregon's finest fruit, the strawberry.

Mr. Holt: It is about noon and we had better adjourn. We have an invitation to visit the University and I don't know of any better time than right after lunch if we can get thru in time. We will meet at the Administration Building at one fifteen and Prof. Newell will show us thru the University. Be back at 2 o'clock as we have a long program this afternoon.

Meeting adjourned.

FRIDAY AFTERNOON

Meeting was called to order by the President, J. O. Holt.

Mr. Holt: There are some committees to be appointed at this time. I will appoint on the Resolutions Committee H. E. Dosch, chairman; A. C. Allen and George Zimmerman. This committee should get together tonight or in the morning and report tomorrow.

On the Auditing Committee I will appoint Albert Bronnel, C. A. Burt and J. B. Pilkington.

The Committee on Legislation is very important, especially this year when the Legislature is in session. This is a standing committee consisting of R. C. Paulus, C. A. Parke, A. H. Marsh, Ira Hutchings and G. I. Reynolds.

The first number on the program is an address by C. I. Lewis, organization manager of the Oregon Growers Co-operative Association.

ADDRESS OF C. I. LEWIS BEFORE THE OREGON STATE HORTICULTURAL SOCIETY, EUGENE, OREGON, DECEMBER, 1920.

Preface. Mr. Lewis: Ladies and Gentlemen: I will state that we have been in a very strenuous campaign and we are still in it

and this is my tenth address in ten successive days. It has never been my practice, as many of you know, to read my addresses; in fact, the only ones I have read are those readings of scientific research at our conventions, but as the subject is large and time is limited, I am going to ask you to let me read this address.

For the past fifteen years I have been studying with great interest the development of co-operative marketing in California, and had the opportunity to spend the greater part of last September in that state where I was able to gain a great deal of first hand information that will be of interest to you. The progress of California the past ten years has been remarkable. They have increased over 1,000,000 in population, being surpassed only by New York state in numerical gain. Their farm values today are the greatest of any state in the Union. There is tremendous building activity in all of the cities and towns, and wherever one travels, the impression that exists is one of great prosperity. The question one would naturally ask is, why this great prosperity?

There are two causes, the tourists and the agriculture. The tourist trade, however, is largely localized, being found mostly in such districts as Santa Barbara, Los Angeles, San Diego, Long Beach, Pasadena, Riverside, and Redlands. The interior valleys and northern portion of the state do not get much of the winter tourist business. I want to remind you that the tourists did not plant over 200,000 acres of citrus groves, did not establish thousands and thousands of acres of walnut groves, did not plant 250,000 acres of cotton; that the tourists did not reclaim the delta lands of the Sacramento, thus developing one of the most productive pear and apricot districts in the world. The tourists did not drain the tule swamps and plant the rice. The tourists did not sink the deep wells and irrigate the interior valleys, did not plant 200,000 acres of raisin grapes within fifty miles of Fresno and were not responsible this past year for the production of about half a billion dollars worth of products.

The canned fruit business of California alone last year was over \$108,000,000. The grape business was figured at \$130,000,000. Raisin business at \$60,000,000, and the citrus business at \$60,000,000, and there are many other horticultural items too numerous to mention.

Go wherever you will in California, the valley of the Sacramento, San Joaquin or Santa Barbara, in the Winters or Vacaville district, up in the hills around Newcastle or Auburn, at Napa, Sonoma and Santa Rosa districts, or in such valleys as the San Gabriel in the south, the answer is the same, tremendous plantings and development which is astonishing. We ask why this great activity and remarkable prosperity. Mr. Geo. Hecke, Commissioner of Horticulture of the State, has during the past two years, repeatedly made the statement that the statewide marketing organizations of California of which there are now over twenty, are responsible, more than any other factor for the remarkable development of that state.

We will study briefly a few of these organizations. The California Fruit Growers exchange is the oldest statewide marketing organization in the state, being now twenty-seven years old. It took hold of the

orange industry when the tonnage was small and everyone was discouraged, and there was no money in the business. They have built it up until today they have 10,500 members and ship something around 50,000 cars of fruit annually, controlling 74 per cent of the citrus business of California.

The central organization is really a clearing house. The growers are first organized into locals of which there are 216 in number. These are largely physical handling bodies. Then there is a second body known as the district exchange, of which there are twenty in number, and finally a central clearing house known as the central exchange at Los Angeles. Every local has a director in the district exchange, and each district has a director in the central exchange. Thus we see the democratic connection.

This organization operates without profit and pays no dividends. The central exchange collects the money, controls seventy-seven specialty salesmen, and gives daily marketing information to the district exchanges. These district exchange managers are largely salesmen who place each local in position to avail themselves of the marketing opportunity offered through the central body. They collect the money for the local exchanges, see that cars are ordered and keep local exchanges thoroughly informed.

The California Fruit Growers Exchange has a very capable manager in G. Harold Powell who is surrounded by an unusually able staff. They have strong departments of orange and lemon marketing, field, advertising and purchasing. They are building a magnificent set of buildings, many of them costing a quarter of a million dollars. They give their growers every possible service in the way of combatting pests, obtaining help and turning out a good product. They are now spending \$750,000 a year in advertising and are making the Sun Kist Orange the best known orange in the world today.

Their purchase department alone did \$8,000,000 worth of business this past season. They own their own timber, operate two lumber camps, manufacture their own boxes, buy the packing and growing supplies for their members. One of the best achievements of the California Fruit Growers Exchange is the fact that they have continually reduced the cost of packing and selling. The cost of the central last year was only 5.5c a box and of the district exchange 1.2c a box.

California Fruit Exchange.

This body has a name sounding very much like the former body. It, however, handles only deciduous fruit, and has headquarters at Sacramento. It uses the same seventy-seven specialty salesmen which the citrus growers use. This concern now handles 6000 cars of deciduous fruits annually at a cost of only 2.28 per cent. At present it has 3000 members. It is purely co-operative, non-profit; either large growers or associations may affiliate with it. It is organized on a truly representative basis, and from the cost of handling is probably the most successful body in America today dealing with deciduous fruits.

California Almond Growers.

Eleven years ago, it was thought the almond industry was doomed. Almonds were worth about 2c a pound and most of the growers were contemplating pulling out their trees. They however decided they would try to organize and form an association, which right from the start has been very successful. This organization now has 4000 members, controlling about 90 per cent of the almond business of the state. They have a very strong field department, have splendid buildings, especially the one at Sacramento, which is probably the finest building of its kind for the handling of nuts to be found in America.

They have numerous local associations which attend to the physical handling, but the selling, grading and packing is performed in central plants. Individuals or associations may affiliate with the central. They also operate with the very close cost of 2.28 per cent. They are expending liberal sums in advertising and have greatly increased the consumption of almonds in the United States, due to increased distribution, both from the point of location and point of time. Formerly almonds were shown in a few cities for the holidays. Now every country grocery carries almonds practically every day in the year.

California Walnut Growers.

This body was organized nine years ago, and in a brief time has made a remarkable record. In 1913 about 40 per cent of the walnuts consumed in the United States came from California, while 60 per cent were imported. In 1918 65 per cent of the walnuts consumed in this country came from the Pacific coast. Like all the statewide marketing movements, the first thing which this organization did was to standardize its pack. They guarantee minimum of 85 per cent good meats. A double handful of nuts is taken from every tenth sack which goes into the car, and 100 nuts are cracked from these samples. A four-pound sample is kept from each car until it reaches the consumer. This organization has built a splendid building, has a string of fire proof packing plants throughout Southern California, has built up a strong field department, is helping its members in the control of pests by working out new sprays and new methods of control.

During the war they sold the shells for war purposes. Now they are made into charcoal for the poultry industry. They recently put up a vacuum pack of nut meats, which has enabled them to get a splendid amount of money from their culls. They have today 3000 members, controlling 60,000 acres of walnuts, handle over 80 per cent of the output, approximately 50,000,000 pounds of nuts per year. They have thirty-two associations affiliated with them, but the management of these is controlled through the central agency. Each association, however, has a director in the central organization.

California Associated Raisin Company.

The California Associated Raisin Company is one of the most interesting for us here in the Northwest to study, because we have in the past gone thru much of the same history which they went thru and even today are experiencing some of their past experiences. History

is repeating itself with our prunes, as it did with the raisins a number of years ago. Beginning as early as 1889, the raisin growers of California attempted to organize. At that time raisins were about 5c a pound. By 1897 the price had dropped to a quarter of a cent a pound. A good vineyard could be purchased for \$50 an acre. Thousands of acres of vineyard were destroyed, and there was general depression in the industry.

In the period extending from 1889 to 1891 several local co-operative organizations were formed in the vicinity of Fresno, and as early as 1892 an attempt was made to form an agreement between these various co-operative bodies and the local packers. This attempt resulted in the formation of the California State Raisin Growers Association. However in attempting to allot the raisins to various packers, price cutting was immediately started and was continued until raisins dropped as low as 2c a pound. Both the private packers and co-operative bodies accused each other of price cutting. The following year a new executive committee of the association was chosen which seemed to be rather favorable to the packers. This led to much dissatisfaction. Several futile attempts were made to get the packers, growers and bankers together, but finally in 1894, the California Raisin Growers Packing Company was incorporated, having a board of ten directors, five being growers and five packers, and they controlled 80 per cent of the raisins. History repeated itself, however, price cutting was once more inaugurated, each again accusing the other of initiating the trouble, and the expected happened, namely a collapse.

In 1898 the association became active again, attempts being made to work with the packers on the one hand and the bankers on the other, which led to the same misunderstanding, and finally led to the association suspending business in 1904. From 1904 to 1913, there was no organization in the state and conditions became increasingly worse. Finally in the spring of 1913 the California Associated Raisin Company, the present body controlling the raisin industry of California, was formed.

When it entered the field the business was in a critical condition. The crop of 1913 had been 140,000,000 pounds, of which 30,000,000 pounds were left unsold in the spring. The association immediately started a campaign of advertising for wider distribution, expending in 1914, \$117,000. By 1917 the raisin crop had increased to 326,000,000 pounds and the association had none left over. They had in a period of four years increased the per capita consumption of raisins from 1.1 pounds to 3.26 pounds. The bake shops of the country when they started advertising were using only 700 tons of raisins a year. At the end of four years the bake shops were using 45,000 tons a year.

Before the advertising campaign was inaugurated the best vineyards could be bought for from \$150 to \$300 an acre. Today they will bring from \$750 to \$1250 an acre, and there are over 200,000 acres of raisin grapes alone in the Fresno district, bringing in an income of about \$60,000,000 annually. The growers have good homes, are well dressed, ride in the best autos and show every evidence of prosperity.

Wylie Giffen, the general manager, is perhaps the strongest man in California today when it comes to organizing a group of growers. He has taken groups of people lacking in common traditions, lacking racial type, lacking in a common language and welded them into an organization with 11,000 members, controlling 88 per cent of the crop of the state. Forty per cent of his members are Armenians, and among the remainder there are large groups of Serbians, Portuguese, Italians, Japanese, Chinese and others. This organization is expending about half a million dollars a year in advertising, and much of their success has been due to a consistent advertising campaign which they inaugurated in the beginning and have persistently adhered to.

California Peach Growers.

This organization has headquarters also at Fresno, and is now about four years old. When they started in business the peach growers were a mighty discouraged lot, as peaches were worth only 2c a pound. It was reported by the packers that there was a huge carryover and that the 1915 price would be even less. Growers investigating, however, found there was no carryover, and this information spurred them on to forming an organization until they now have 6500 members growing 40,000 acres of peaches. This past year they sold their entire crop in September, 24,000 tons for \$8,000,000, an average of \$340 a ton to the growers.

They have a very strong central organization, have weekly meetings of all their managers. Recently they have taken in the fig growers. The consumption of figs in this country today is about 6000 tons a year, yet there are enough figs planted in California to give a crop in the future of from 40,000 to 60,000 tons. Yet they are not dismayed at this prospect but are at once beginning to use figs in numerous new ways and they are beginning to advertise figs and feel that when the time comes that their figs will be consumed.

There are many other organizations which I could describe but space will not allow. There are a few general conclusions, however, which will be of interest. California long ago came to realize that the stability of her horticulture depended upon profitable marketing of the crop. That her isolation here on the Pacific coast from the world's great consuming markets taught the individual in California that he was helpless and that only collective bargaining as represented in statewide co-operative marketing could help solve the state's marketing problems. California is prosperous today because these statewide movements were formed, and have proved a success.

It is interesting to note that leaders, business men and bankers all over the state are behind these co-operative bodies, because they sense themselves that these bodies have been more directly responsible for the prosperity than all other factors combined. These statewide movements all started with a small acreage, about 30 per cent of the tonnage, and they have increased until today on an average they control about 90 per cent of the tonnage. The raisin association in four years has grown to an organization controlling 88 per cent.

We owe a great debt of gratitude to Wylie Giffen for introducing the long term contract which all the larger bodies of California that have been organized in the last four or five years have adopted. This is probably the best contribution to co-operative marketing which has occurred since the introduction of the Rochedale store system in England in 1844.

All these bodies in California are splendidly financed. Money is raised in various ways, through the sale of common and preferred stock, or bonds, many of them raised half to a million dollars to start in with. Even this past year, with tight finances and declining markets, they have had no difficulty in securing ample funds to advance growers and finance their crops. All these bodies have standardized the pack, have reduced the cost of packing, have reduced cost of supplies, and reduced the selling cost. Interesting examples are that of the Almond Association and the California Fruit Exchange, being only 2.28 per cent each.

All of the managers have adopted fundamental marketing requirements from the beginning. Fruit is either sold at auction or f. o. b., and never by consignment. These organizations have all given a greater distribution and have turned the bugaboo word of overproduction into greater production, greater distribution and greater prosperity. They have obtained distribution not only from point of location but also from point of time. This they have done by finding more markets on the one hand and getting consumers to eat the fruits over a longer period on the other.

They are all spending huge sums in advertising. The combined budget of these statewide bodies today is over \$2,000,000 annually. Is it any wonder that California is getting settlers, that she is selling her products, that she is making her fruit growers prosperous when this amount is spent annually to acquaint the world with the merit of the products that state produces, and to acquaint the general public with the wonderful possibilities of the state for the future settler? We, here in Oregon, will do well to heed the lessons California has learned, and rapidly apply them to the development of our state.

Mr. Holt: This paper of Mr. Lewis' represents an exhaustive study of associations which are the first pioneers of the West.

MARKET CONDITIONS, PAST, PRESENT AND FUTURE.

R. C. Paulus, Salem.

Preface: Like Mr. Lewis, I have an apology to make before I start in. I have been working day and night and was unable to write the article until this morning, so it does not show quite as much preparation as that of Mr. Lewis.

Marketing of any commodity is affected by a number of conditions, many of which do not appear on the surface. A market for anything is mainly the result of two opposite conditions, supply and demand. These conditions have occurred and recurred many times in the past and the future can to a certain extent be predicted by a study of the marketing conditions of previous years.

The major conditions which affect the marketing of fruit are the size of the crop, the size of competitive crops, and the prices being received for these competitive crops; in other words, in the marketing of apples, if there is a large orange crop and oranges are cheap, this would have a bearing on the apple market and conditions would indicate that apples also would not bring high value. In the marketing of dried prunes if there is a large crop of other dried fruits, such as raisins, peaches, apricots and evaporated apples, and also a large pack of canned fruits under ordinary conditions one could not expect a high dried prune market.

The underlying conditions which affect market and to which much thought is given by students of marketing are money conditions, labor conditions, conditions of various farm crops, various commodity prices and amount of export business available. If money is tight the trade buys from hand to mouth, making a slow market. The question of whether a market will hold and remain firm under such conditions is mainly a question of the producer's ability to hold his crop and market it gradually as it is wanted by the trade.

If labor conditions are off and there is lots of unemployment, wages usually decline and both the unemployed and the declining wages affect materially the purchasing power of the laboring class as a whole and this class along with the farmers constitute the heaviest portion of the American consuming public.

If the conditions of the farmers' crop in the East are poor it affects not only the purchasing power of the farmer himself but also of the population of the tributary cities. If the farmer has a large crop and cannot get anything more out of it than the cost of production this also affects the purchasing power of farmers in general and the city which they support.

If commodity prices in general are high it is reasonable to expect a strong market for fruit. If commodity prices on the other hand are low, it is not reasonable to expect an extremely strong market, as trade will be diverted to other cheaper foods.

If there is a foreign outlet sometimes when otherwise there would be a weak market thereby affording a market for the surplus which would break the domestic market, this would have a tendency to strengthen marketing conditions.

Sometimes conditions in one line will affect conditions in another; for instance, when sugar is extremely high it has an effect on the sale of fruits and also walnuts, because both fruits and nuts depend to a great extent upon sugar in their preparation for final consumption, walnuts being used a great deal with sweets, and people will refrain from buying foods which require an addition of much sugar when sugar is extremely high.

Another factor which is of a secondary nature and which affects the prices received for fruits is the amount of fruit of various kinds in cold storage. A heavy carry-over of dried fruits, for instance, from one year to another affects the sale of the next season's crops. On the other hand, cold storage of fresh fruits often assists in tiding over a temporary over supply in the market. This is shown by the

fact that as long as there is cold storage space available for fresh apples, for instance, the market on apples still remains firm because the shipper, if he does not like the price which is offered him, is able to divert his apples to cold storage and await a more favorable market. When the cold storages are all full which is usually between the latter part of October and the first of December, the apple market usually goes to pieces. On the other hand, later on, after the first of the year, the supply of apples becomes diminished and on account of the shortage prices increase materially.

The same thing is true to late pears. When the shipments of late pears to the East are heavy, speculators are very busy on the auctions picking up fruit which they put into cold storage and sell on the same auction a couple or three months later at a handsome profit.

The system at present in vogue in the marketing of farm products is all wrong. It compels the farmer to market in one month the result of the entire year's efforts and in many instances, such as grain, the entire supply of a single commodity for a year's consumption. This condition is caused by the inability of the farmer to carry his crop and feed it to the American public as it is wanted. The result is that speculators operating on a large scale purchase the American farmers' crop of grain at the time when he is most in need of money to pay his harvesting expenses and other indebtedness which have accrued since the harvesting of his last crop and enormous profits are made by these speculators who in many instances perform no legitimate functions in the sale and distribution of the product. This condition can never be remedied until the farmers themselves are able to handle the selling of their own products and to arrange for sufficient finances to enable them to distribute and market their products over the entire period of consumption which is from three to twelve months, depending upon the perishability of the product. It was inevitable that when the deflation of the inflated conditions of the past two or three years had to come, almost the entire burden of this deflation fell upon the farmer. When the break came, like the waters piling up behind a dam, it struck the weakest point, it followed the line of least resistance and this happened to be the farmer. Labor is well organized, manufacturers are well organized, and all other business is being conducted more or less co-operatively for the reason that business men and the laboring men have found it to their advantage to co-operate.

This has not been true with the farmer. The very isolation of his farm has tended to make him an individualist and not a co-operate, and a co-operation which under ordinary conditions has spelled success and independence for the business man and the laborer has been resorted to by the farmer only when he and his family were threatened with extermination. He has usually undertaken co-operation under worst possible conditions and if co-operation under these adverse circumstances has not fulfilled his most sanguine hopes he has come to the conclusion that it is impossible for the farmer either individually or co-operatively to handle the sale of his own products. This, of course, is a wrong conclusion that has been proved by the many large,

successful associations of producers of various farm products which are now in existence and which are being increased daily.

The United States Department of Agriculture has foreseen the necessity of co-operation among its producers and has fostered it with **every possible means**. The government also in order to encourage the farmer to protect himself has exempted him from the operation of the Sherman anti-trust law. Big business is more alive to the situation the farmer is in than ever and measures are being urged to assist the farmer in the marketing of his products to the extent that he will get a larger proportion of the consumer's dollar than he is now securing.

As applied to the present, there are many favorable indications in regard to the marketing the remainder of the dried and fresh fruit crops still unsold in Oregon, and on the other hand some fundamental conditions existing in this country which are not favorable. Among the favorable conditions are the high prices of other fruits both fresh, canned and evaporated, also a low price on sugar. Export business on fresh fruits is working out gradually but on dried fruits the export market has not opened up very materially this year.

The crops of Spitzenburg apples and Jonathan apples are short this season and there will not be enough to go around. On this account the market is strengthening at present and indications at present are that by Christmas holidays the market on Spitz will be very firm. The question now before the fruit growers is whether their Spitzenburg apples were picked green enough to hold until the Christmas holidays. If not, they must be sold at once and although the market is stronger at present they would have to miss a much better market later on.

The same thing is true with dried prunes. Within the last few days letters received from all over the United States and Canada indicate a better feeling among the wholesale grocers. Stocks of old prunes are gradually cleaning up and many wholesalers who did not buy new crop because of the amount of old crop prunes on hand will soon be on the market.

In the meantime the canned goods pack of last season which was affected by extremely high costs of cans, labels, boxes, labor and raw products was much short of a normal pack, due to the inability of canners to finance these high-priced purchases. The result is that canned goods are selling at high prices. The wholesale market, however, in canned goods is not favorable and owing to lack of inquiry the wholesale canned goods market has declined considerably.

The unfavorable conditions are mainly financial and labor conditions and the inability on the part of the Eastern farmers to move their crops at a remunerative price. Labor conditions, however, are becoming worse. Almost daily we read of factories closing down and men being thrown out of employment and the competition among workers for jobs is bringing down wages with the result that the purchasing power of the laboring class is being diminished and until some solution for the Eastern farmers' troubles is worked out, conditions in the communities which depend upon their agricultural resources are not going to be favorable to either a heavy consumption

or a high price. In the meantime prices on the smaller sizes of prunes have been hammered down to a basis considerably below a par with other food products. It is not likely they will go much lower and if any amount of buying should take place it would not take so very long to clean up the weak holders in which case a firmer market can be expected.

It has been shown that the consumption of prunes in the United States in years previous to 1919 averaged around eighty to ninety million pounds. Realizing the enormous increase in production about to take place in their industry on account of a heavy increase in bearing acreage, California prune growers have been doing heavy advertising to increase consumption with a result that it has now been shown by them that the consumption of prunes in the United States and Canada ran around 200 million pounds, not including the prunes which were carried over. Counting the California crop as 155 to 160 million pounds for this season and the Oregon crop from 25 to 30 million pounds it is apparent that, even with the carry over from last year's crop estimated at 15 to 20 million pounds, if the present consumption can be kept up, even without any export business, the present crop should be consumed and the strenuous efforts being made through advertising this fruit should not only keep up the consumption but also increase it.

Mr. Holt: Are there any questions or discussions on these two papers that have just been read? If not, we will proceed to another. Mr. Quarnerberg of Vancouver, Washington, has lately returned from a trip to England for the purpose of investigating methods of handling filberts and the varieties grown in the old country. He will now talk on filbert culture.

Mr. Quarnerberg: Mr. President, Ladies and Gentlemen: At the time that the program for this meeting was under construction, Mr. Minton, secretary of the Society, wrote and asked me to prepare a paper on my experiences in England. I told him that I had already prepared a paper for the Western Nut Growers Association and if he thot it worth while it could be read here and you would have a chance to ask any questions that might be answered. The question is a large one in the Northwest. We are very young in the business and undoubtedly, it will interest you to hear how they are carrying this on where it has been pursued for hundreds of years. I am a very poor reader, and whenever I read someone yells "louder," so I thot the audience here would rather have some one else read the paper, and I have asked Mr. Minton to read and afterwards I have some pictures and samples of varieties of filberts which might interest you.

FILBERT CULTURE IN THE COUNTY OF KENT, ENGLAND.

By A. A. Quarnerberg, Vancouver, Wash.

Last summer I made a trip to England for the purpose of studying filbert culture in a country where filberts have been successfully cultivated for centuries.

The County of Kent, situated in the southeastern portion of the country, is the principal filbert producing section of England; and especially in the vicinity of the city of Maidstone, in the Medway valley.

In this county thousands of acres of land are devoted to filbert culture. I very much enjoyed my little daily excursions into the many different, so vigorous and systematically trained and pruned orchards. These excursions gave me the opportunity and pleasure of meeting a number of the most prominent and successful growers, and of discussing with them the various phases of filbert culture. Thereby I gained much valuable information concerning the practices in vogue.

The County of Kent has a mild and genial climate, much like that of the Pacific Northwest. The surface of the country is rolling. The soil is a gravelly loam with some chalk; it is generally well drained and fertile.

Judging from the flourishing condition of the vegetation generally, the climatic conditions seem to be favorable for the growing of filberts as well as other fruit common to that region.

Making the Most of Small Tracts.

In Kent, the filbert or cob nut is to a great extent grown in alternate rows with other species of fruit, such as apples, pears and plums; the filbert trees usually being planted from 24 to 30 feet each way, making the distance between the trees in the mixed orchard 12 to 15 feet apart. In these mixed orchards the filbert trees are pruned low and not allowed to grow more than six feet in height, while the other fruit trees are headed high and trained to a position above the low headed filbert trees. Often the apples, pears and plums form a dense cover over the cob nuts and yet the latter were said to bear well, though not so abundantly as in more open spaces.

In some of the older orchards, many of the standard fruit trees had died of old age and the cob nut trees occupied all the space. In such cases the filberts frequently had a spread of over 20 feet across the top, but still they were not allowed to grow over the standard six feet in height.

In favor of the mixed orchard it was claimed that the filberts and cob nuts would withstand considerable shade from other fruit trees and that generally some kind of a crop from the different varieties of fruit could reasonably be expected every year, so that by this method the land would produce a more regular income than when planted to filberts alone.

Such was the case in 1919, when the cob nuts and filberts had a short crop while there was a good crop of cherries, apples, pears, plums, etc.

Cob nut and filbert trees planted alone in orchard form were usually set 12 to 20 feet apart, or somewhat closer than when interplanted with other fruit trees.

In spite of an occasional failure or short crop the Kent filbert growers seemed to have full confidence in the industry, claiming that the cob nuts and filberts, on the average, paid as well as fruit grown there, and, in my judgment, Kent certainly is a good fruit section.

While the filbert trees naturally did best on good land, it was claimed that the cob nuts and filberts were less exacting as to soil and that they would succeed on land quite unprofitable for various kinds of fruit. It was also said that rich and wet soils were expected to produce much wood and yet frequently yield less nuts.

The variety of filbert most largely grown in Kent is the so-called Kentish cob, or Lambert, a variety with long husk and shape much resembling our Du Chilly, but probably a different strain of that type of nut. Regarding filbert and cob nuts, I will quote what a technical Kent filbert man says:

"The old distinction between filberts and cob nuts was that the first-named had long husks or full beards, closing over the nuts, and the cob only a short one plainly showing the nut."

This distinction has not been accurately retained and the Kentish cob is by that definition truly a filbert, but in Kent all the short-husked nuts are generally known as filberts and the long-husked nuts as cob nuts.

The Kentish cob is placed in the front rank of the so-called market nuts because it is a large, attractive and good-flavored dessert nut, and the tree is a strong grower with great bearing qualities.

There are quite a number of other varieties of filberts grown in Kent, but of the short-husked and roundish shaped nuts there were none which in my opinion, in all-round good qualities, would compare with our Pacific Northwest grown Barcelona. But whether the Kentish cob, the chief nut in Kent, on the average, is a better nut than our Northwest Du Chilly, I am not prepared to say.

Concerning the question of pollination of the filbert, so important to us, I did not learn much in Kent, mainly because our own chief varieties, such as Du Chilly and Barcelona, are not grown there, and besides the growers generally did not seem to have the matter of filbert pollination fully systematized. Any imperfection in this respect may partly be explained by the circumstance that the Kentish cob, the variety chiefly grown there, to a great extent appears to be self-fertile, at least that seems to be the indication from the fact that large blocks of Kentish cob trees planted without any special provision for cross-pollination, were said to be very productive. On the other hand one of the best authorities on filberts recommends the planting of one Cosford cob to every 25 trees of Kentish cob to insure good fertilization. The Cosford was said to be a better producer of catkins than the Kentish cob and itself a thin-shelled, good flavored nut. Another variety known as the Red Barcelona, and an enormous producer of catkins, was also reported to be used as a pollenizer, but its nuts were said to be small and of little commercial value.

Pruning of Tree Held Important.

A point considered of the greatest importance in connection with the cultivation of the filbert in Kent is the pruning of the trees. To see and study the close and systematic pruning of the filbert tree and its results was the main object of my visit. And now after having

visited and examined a number of the Kent filbert orchards, it is my opinion that the thorough and systematic pruning which the growers are giving their trees undoubtedly is a strong factor in the success made of filbert culture there. By the thorough methods of pruning all the bearing wood of the trees is practically renewed every few years and the life and bearing period of the trees are prolonged almost indefinitely.

In the Beadle Brothers' orchard, near the city of Maidstone, I saw one of the oldest cob nut trees in the county. Its main stem was between two and three feet in diameter, one foot above the ground, and the tree although more than 150 years old still appeared to be as strong and healthy as the surrounding trees fully 100 years younger.

I found the filbert growers nearly all agreed on the basin-shaped form of tree on a single stem from one to one and one-half foot high as the best for all purposes.

Concerning the training and forming of the basin-shape tree, W. F. Emptage, Horticultural Adviser and Specialist, gives about the following directions:

The newly planted trees are allowed to go without pruning one year, or until they are well established. The single stem is then cut back to a height of 12 to 15 inches to cause it to throw out shoots from the head to form the future tree. Four or five healthy strong shoots are allowed to grow, which in good ground they do rapidly. During the following winter the shoots are spread apart carefully and held in the form of a basin by a wooden hoop placed between the branches. These shoots are tied out around the hoop at equal distances and headed back in such a way that the terminal buds open outwards. These shoots are then allowed to grow and to put out new branches until about the fourth year when there will be 12 to 15 branches. The heads are kept broad, spreading and open by tying out the branches to stakes set in the ground, or otherwise, in order to get them into perfect shape. From these branches a set of spurs or shoots is given off on which the nuts are produced. To cause them to push out such spurs along their whole length, the main branches must be headed back more or less at every winter pruning.

According to E. A. Bunyard, one of the best authorities on filbert culture in Kent, after the base of the tree has been shaped to the proper form, pruning consists of breaking out the strong suckers which grow up in the center of the tree, cutting the strong leading shoots back, thinning the spurs, removing old wood, etc.; the side shoots being best thinned after the flowers appear and the catkins have remained long enough to fertilize the pistulate flowers. And if time permits in July and August it was said that it was a great help to the strength of the tree to break the stronger shoots off the upper boughs with the finger and thumb. This operation plumps up the buds below the fracture and assists in ripening the wood. This method is found better than cutting as the broken surface allows some sap to exude and tends to prevent the formation of secondary growth, which would weaken the tree, and be of no value in producing nuts. In winter pruning these broken ends are smoothly severed with a sharp knife or shears; and the pruner should so manage that there will always be

an abundance of good young wood in the tree for fruiting purposes. When a twig shows signs of age the grower should prune so that a fresh young one will succeed it in the next year's cutting, so that worn out twigs will never be seen in old trees. The trees should be so managed that at the end of 100 years they should be from 15 to 20 feet across the top but not higher than six feet from the ground.

It was also said that some fine nuts were produced on trees of pyramid form, 10 to 12 feet high, which have their spurs shortened, thinned, etc., in the same way as the basin-formed trees, gaining a few inches of upward extension annually.

The Kent filbert growers generally were well agreed on the necessity and great benefits of close and systematic pruning both for quality of nuts and for yield.

Filbert orchards in Kent are kept in good state of culture mainly by hand cultivation, such as forking, hoeing, etc. Some growers claimed that on account of the shallow feeding habits of the filbert tree, plowing would damage the roots. However that may be, the low-headed, spreading trees and the crowded condition of the orchards generally made the ordinary methods of cultivation hardly practicable or very inconvenient to say the least. Suckers were cleared out wherever they appeared.

I was told that the Kent filbert orchards received a dressing of barnyard manure or other fertilizer whenever required to keep the trees in good bearing condition.

The Kent filbert orchards were comparatively free from disease and insect pests and I did not hear of any filbert blight there.

As to yields, it was said that one ton of filbert nuts has frequently been obtained from one acre, and as high a yield as two and one-half tons per acre has been reported, but that was very exceptional. The owner of a 300-acre filbert plantation told me that he, in a long run of years, had, in round numbers, harvested from 300,000 to 500,000 pounds of nuts a year, or from 1000 to 1667 pounds per acre. This probably may be taken as a fair estimate of the average yield of the filbert orchards in Kent.

The cob nuts and filberts grown in Kent are cured and sold almost entirely in the husk, and for this purpose it was said that the nuts could be picked somewhat earlier than when husked.

I have briefly described some of the things which I saw and learned concerning filbert culture in Kent. The methods, practices and results obtained in the culture of the filbert there are certainly interesting and should be carefully studied and investigated by us with a view of adopting such of the methods and practices as may be thought beneficial and practical under existing conditions and circumstances in the Pacific Northwest.

Mr. Brown: Why do they prune trees about six feet?

Mr. Quarnberg: The pruning was started on account of orchardists wanting the filberts low and they are continuing this in the new orchards. I believe they do not pick them on the ground as we do, but in the trees and the low trees make it easier. They sell the filberts

in the husks. I presume that is one reason why they want the lower trees.

Mr. Brown: They pick all the nuts, then?

Mr. Quarnberg: Yes, that is what I understood and in that case it would be better to have very low trees.

Mr. Minton: Why do they sell them in the husk?

Mr. Quarnberg: Because they want them that way, and of course, as they weigh more, it is all right for the growers.

Mr. Jaques: Does the consumer buy them in the husk? Is it practical here to gather them from the trees rather than from the ground?

Mr. Quarnberg: You might be apt to pick them too soon here.

Mr. Brown: How is the yield compared with some we have here?

Mr. Quarnberg: The yield is about the same, but we will have to do some pruning here and prune out some of our high tops.

Mr. McGee: Are there any diseases or pests developed over there in the filberts?

Mr. Quarnberg: I understand that there were some bud mites but I did not hear of any other diseases and did not see any so there could not have been very many of them.

Mr. Holt: Are there any other questions on filberts? If not, we will move along. We have election of officers in a while and we will have to proceed. We have the pleasure of having with us a representative of the United States Department of Agriculture, Mr. George A. Root, who has been investigating the white pine blister rust in Oregon and will talk on its relation to the fruit we have here.

WHITE PINE BLISTER WORK IN OREGON.

George A. Root,

Assistant in Blister Rust Control, Bureau of Plant Industry,

U. S. Department of Agriculture.*

Mr. Root reads:

The White Pine Blister Rust (*Cronartium ribicola*) is a destructive disease of the so-called white pines, that is, those pines which bear their needles in bundles of five each. Due to its severity in Europe, it is impossible to grow white pines there with profit. It was introduced into northeastern America from Europe about 15 years ago, on diseased nursery stock. Since then it has become firmly established in many of the most valuable white pine stands of New England, New York and the Lake states. The damage which it annually causes to

*Western branch of the Office of Blister Rust Control, in charge of Mr. G. B. Posey, is located in Berkeley, California.

those forests is rapidly increasing, although it has not as yet become the menace that it is in Europe.

The White Pine Blister Rust.

This disease is not an insect, as many erroneously suppose, but a plant disease which attacks all five-leaf pines. Fortunately this is a disease which, like the wheat rust, requires another host plant in order to complete its entire life. This host plant is some species of wild or cultivated currants and gooseberries (*Ribes* and *Grossularia*) (See fig. 1). This disease is one which affects the bark of the pine, producing large cankers which eventually kill young growth and maim and disfigure old trees by shutting off the supply of sap. In time there appear along the swelling of these cankers numerous white blisters, which eventually break open, disseminating orange-colored spores of a powdery nature. (See Fig. 2). These may be noticed from April to the middle of June, and often later. The spores are blown far and wide by the wind, or carried by birds and insects. These spores cannot re-infect pine, but should they happen to reach currants or gooseberries, the other stage of the disease is started on the leaf, appearing on the underside as a rust. The spores produced on these leaves are also yellow or orange in color, and may re-infect other currant and gooseberry bushes enabling it to spread over a wide area. Later on there is produced another set of spores, brownish in color, which can only infect the pines. (See Fig. 3). Thus the cycle is kept up indefinitely. The yellow, or summer stage, may be noticed on the leaves of wild and cultivated currants and gooseberries from June 1 to the fall of the leaves. The brown hair, or autumn stage (See Fig. 3) may be noticed about August 1, often occurring on the same leaves which are still bearing the summer stage. Specimens of the disease may be seen at the office of the secretary of the State Board of Horticulture in Portland.

Special attention should be paid to the cultivated black currant, as this is the most susceptible variety. Some recent evidence by government pathologists shows that the disease can winter over on currant and gooseberry plants as well as on the white pines.

Methods of Control in the East.

When the seriousness of this disease in the United States was realized, state and federal authorities endeavored to stamp it out. But it had spread so rapidly over large areas that complete eradication was impractical. By completely eradicating the currants and gooseberries in and near a white pine forest the disease can be controlled. Due to the intensive forestry methods, and the fine stands of white pine in the eastern states, this method of control was found feasible. No spraying of any sort has been found advantageous in even controlling the disease.

The cost of control work on a quarter of a million acres in the New England states in 1920 averaged only 24 cents per acre. In some other states the cost exceeded \$1.00 per acre, but even much higher costs are insignificant compared to the income producing value

of eastern pine. On this basis the production of white pine timber can be carried on profitably, in spite of the disease. But such control measures would be manifestly impractical in the West. Here the white pines occur over immense stretches of rough, mountainous country, and as a small percentage of a mixed stand. Several species of wild currants and gooseberries are present in great abundance throughout these regions. These conditions would make it very difficult, if not impossible, to check the disease once it became firmly established in the western white pine and sugar pine forests.

White Pines in Oregon.

The immense stands of white pine in the West are in danger of attack by this disease if ever the infection is carried this far. These stands contain a supply of the finest timber marketable. Within the State of Oregon, the two chief species of white pine occur—the western white pine (*Pinus monticola*), and the sugar pine (*Pinus lambertiana*). The former occurs mostly in the central part of the Cascades while the latter occurs especially in the southern part, being a continuation of the immense stands in California. The white bark pine (*Pinus albicaulis*) occurs sparsely at higher altitudes, but is of no economic importance. Sugar pine is America's largest pine, and is one of the finest timber trees in the world. Approximately 11 billion feet occur in this state with an estimated value of \$36,000,000. Western white pine, while not attaining the size of sugar pine, grows much more extensively in the West as a whole, and its lumber has even a greater comparative value. The approximate number of feet of this species in Oregon is reckoned at 825,000 million with an estimated value of \$2,887,500.

White pines are fast growing trees, and if the young trees are allowed to develop the annual growth will remain a large asset to the state. The introduction of White Pine Blister Rust would certainly mean that much of this young timber would never develop. Young white pine stands are readily killed out by this disease. Mature trees are greatly weakened, but in most cases may still be cut for timber. Constant loss of young growth would leave these great tracts with no future as white pine forests, after the mature stands had been cut.

Wild currants and gooseberries are abundant in Oregon, 30 species being known to occur within the state. They are plentiful throughout the mountainous regions, where the white pines are found, and would allow the disease to flourish there, if once introduced. They are also found in sufficient number in eastern Oregon to carry the disease to these pines, from any neighboring region.

Blister Rust Work in Oregon.

During the past three years the Bureau of Plant Industry of the United States Department of Agriculture has worked to keep the western pine forests free from the White Pine Blister Rust. A campaign has been conducted in all of the western states along the following lines: (1) Locating and inspecting every shipment of five-needled pines, currants or gooseberries that is known to have entered this

territory from a region where the disease was present. (2) Searching for violations of the Federal quarantine which was designed to protect the West from this disease. (3) General examination of the wild and cultivated white pines, currants and gooseberries to see if the disease was present. The purpose of this work was to locate and stamp out any trace of the disease which might be found, and to prevent by all means its introduction into the West.

Since the beginning of this work, thousands of imported pines, currants and gooseberries have been inspected, and large areas of native white pines have been scouted. So far no evidence of the disease has been found in Oregon or any other of the western states.

The Oregon State Board of Horticulture, working in co-operation with the Bureau of Plant Industry, has intercepted and destroyed a number of shipments of potentially dangerous pines, currants, and gooseberries which were entering Oregon.

Quarantine Enforcement.

Results of extensive searching for the disease in the West indicate that it has not gained a foothold here. To keep it out requires the rigid enforcement of state and federal quarantine laws enacted for the purpose. These laws were made effective by the State of Oregon on June 1, 1917, and by the federal government on July 1, 1917 and July 1, 1919. They prohibit the importation of five-needled pines, currants or gooseberries into Oregon or the other western states from any foreign country, or the eastern United States. The quarantine lines laid down are as follows: on the east, the western boundaries of Minnesota, Iowa, Missouri, Arkansas and Louisiana; on the north, the Canadian boundary; on the west, the Pacific Ocean; and on the south, the Mexican boundary. Thus the West is walled off on every side from the introduction of White Pine Blister Rust, if these quarantines are rendered effective.

Oregon does not have a law requiring the terminal inspection of plant stock carried by parcel post. Recent investigations in other western states have shown that a tremendous amount of plant stock is moved by this medium of transportation, and that it contains much material of interest to those who are endeavoring to enforce the White Pine Blister Rust quarantine. Here is a definite loophole by which plants infected with the White Pine Blister Rust may be entering Oregon today. Regulations have been laid down by the Post Office Department whereby any state, after a declaration of intention, may inspect parcel post packages containing plant stock. These regulations furthermore impose a fine of \$100 upon any person who ships plant stock by parcel post into such a state without definitely labelling the package as containing such. The opportunity is clear for those states which wish to take advantage of it. The Office of Blister Rust Control earnestly advises all western states to set up a system of parcel post inspection, to prevent the introduction of White Pine Blister Rust, as well as other diseases and insect pests.

Summary of Situation.

The people of Oregon have doubtless read previously of the introduction of White Pine Blister Rust into northeastern America. Later reports have told of its destructiveness in the native pine stands there. Very likely the principal feeling of these readers has been one of relief in that they have imagined that this was one plant disease problem with which the West did not have to cope. Probably the pine owners in New England and other eastern states had similar thoughts a few years ago, when they read of the destruction of pine stands in Europe, due to this disease. The Atlantic Ocean formed a seemingly insurmountable barrier to its spread. Likewise, the immense stretch of pineless country embodying the great plains constitutes a similar barrier to protect the West from the infected areas in the East. Will it prove to be more efficacious than did the Atlantic Ocean? If natural means of dissemination alone were to be considered, the disease would never have crossed the Atlantic. The transportation of plants by man brought the disease to eastern America. That is the only means by which it can reach the West.

Let us cast up the western situation in ledger form, and see where we stand. On the debit side we have the cost of maintaining an efficient quarantine, at most a few thousand dollars a year. On the credit side we have the value of the white pine timber which will be cut in the West during all future time. As our ledger shows us, there should be no doubt in this matter. No effort on our part will be too great, if we succeed in keeping White Pine Blister Rust out of the West. If it enters Oregon and the other western states, it will be the fault of some few individuals. It is the duty of people in the East not to ship currants, gooseberries, or five-needled pines into the West. It is equally the duty of Westerners not to order these plants from Eastern nurseries, or to request their friends there to send them.

In the West, we may think of White Pine Blister Rust as something nebulous and far away. Let us for a moment assume that this disease is widespread in this region on sugar pine and western white pine. Then considering data showing its destructiveness in Europe and eastern North America it takes on a new significance, and becomes a problem in which everyone of us is concerned.

Mr. Parke: I would like to state that the purpose of Mr. Root reading this paper was because of the fact that this Blister Rust menaces the fruit we have in the West and the Federal Government is looking for this disease. It is carried in one form by gooseberries and currants. We should not go east of the Mississippi River to get these plants.

Mr. Minton: This is a question that is a vital one. It not only attacks the white pine but grows on berry plants. I believe that there is a federal quarantine east of the Mississippi river and it is especially interesting to the growers of gooseberries in this country for we are producing a very large amount of them and will continually do so. This is a question, I think, that should be taken up by our Legislative Committee and to provide for an examination of all parcel post shipments of nursery stock into the state.

Mr. Dean: In reply to what Mr. Minton has just said relative to this inspection of parcel post shipments, it is only necessary for Mr. Parke to make a declaration stating that you wish to establish parcel post quarantine points and that will control all shipments of that nature. It is not necessary to take legislative action.

Mr. Holt: Mr. Reynolds of Salem has a matter to bring before the Society.

Mr. Reynolds: Some years ago, in 1907, there was in existence in this valley the Willamette Valley Apple Growers Association. Mr. Newell was vice president, M. Lonsdale was president and I happened to be the secretary-treasurer. For many years the association has been out of existence but we have \$35 or \$40 in the treasury. In order to get rid of this sum we thought it might be well to offer it to the State Association, provided they would accept the money and that I could feel that I had gotten rid of it legally.

Mr. Parke: I move you that the State Horticultural Society accept this fund from the Willamette Valley Apple Growers Association and that it be put in the Irreducible Fund and we take the trusteeship of it.

Motion carried.

Mr. Holt: We are to elect a president, vice-president, secretary-treasurer and also select a place of meeting for next year. I presume that the first thing in order will be to select a place of meeting. Where shall we meet next fall?

Mr. Minton: Mr. Chairman, I believe that the horticulturists surrounding Forest Grove would be delighted to entertain this body at the next annual meeting. I have not been commissioned by them to give this invitation, but as I spend a good deal of my time there, I am going to take the liberty of inviting this association to hold its next meeting at Forest Grove.

Mr. Paulus: I move we hold our next meeting at Forest Grove and hold Mr. Minton responsible for our having a good time at that place.

Mr. Holt: It has been moved and seconded that we hold our next meeting at Forest Grove.

Motion carried.

We are ready for nomination of president.

Mr. Dosch: It is customary that we always elect a president from the city where we hold our convention; therefore, I place in nomination Mr. Earl Pearcy for president.

Mr. Parke: I move you that the secretary cast the ballot for the only nominee, Mr. Earl Pearcy of Forest Grove.

Motion carried.

Mr. Holt: Mr. Pearcy is elected.

Nominations are now in order for vice-president.

Mr. Minton: Mr. Chairman, I am going to place in nomination Mr. Albert Bronell as vice-president.

Mr. Holt: Are there any other nominations?

Mr. Hutchings: I move you the secretary be instructed to cast the ballot for Mr. Bronell.

Carried.

Mr. Holt: Nominations are in order for the secretary-treasurer.

Mr. Dosch: I move that the present incumbent be elected and the president give him the unanimous vote.

Carried.

Mr. Holt: Now we are to elect one trustee. Mr. Dosch is the retiring trustee of the association.

Mr. Paulus: Mr. Chairman, I think that Mr. Dosch has served the fruit growers of Oregon long and well, and I make a motion that the secretary cast the unanimous ballot that he be retained.

Carried.

Mr. Holt: This completes the election of officers. Now we are just leading up to the last day which we consider the most important. Tomorrow we are going to talk about prunes, starting in on them at the banquet tonight which will be mostly prunes. Tomorrow we will have new prunes, near new prunes, commercial and supposed to be commercial prunes and are in hopes of having some cooked prunes for you to examine, passing your judgment on the different kinds.

As it is getting late, it has been suggested that we omit our visit to the plant until tomorrow morning.

Mr. Parke: I move you that we pay you a visit tomorrow morning at a quarter until nine.

Mr. Holt: We will all meet at the cannery and we will be glad to take you down in autos but it is so short a distance from the Osburn that when you cross the race you are in our territory.

Mr. Brown: I do not understand anything about this banquet and I think there are others coming in late who do not understand about it either.

Mr. Holt: The banquet is free to all visitors outside of Lane County and residents of Lane County can get their tickets from Mr. Harloy, Mr. Beebe or myself.

Mr. Minton: According to our constitution and by-laws, it is necessary for our annual meeting to be held in the office of the secretary of the association, which our by-laws say is in Portland and I am going to make a motion at this time that when we adjourn we adjourn

to meet at the office of the secretary, 318 Chamber of Commerce Building, on Monday, December 6th, at 10:30.

Motion carried.

Mr. Holt: This meeting is for the purpose of legally confirming the election of officers that we have just gone thru.

Mr. Dosch: I move to adjourn.

Mr. Holt: We are adjourned until 9:45 Saturday morning.

SATURDAY, DECEMBER 4, 1920

Meeting was called to order by the President, Mr. Holt.

Mr. Holt: We wish to call your attention to some of the exhibits that are at the back of the room that may interest you. Here is some apple syrup that you have heard about, made out of the pure cider boiled down, with no sugar added. These are some pitted prunes we sent to California to be pitted and this is the product we got. We are using it for mince meat and substitute for raisins and there are many other possibilities. From 25 pounds of prunes which were pitted they sent back the pits weighing about three and a half pounds. There is some apple jelly which is made from pure pumice.

Any resolutions that are intended for the resolutions committee should be handed to them between now and noon. We will have their report immediately after noon. There is one resolution that we would like to have at this time, as the party preparing the same must leave on the noon train.

Mr. Lemmon:

In view of what has already been accomplished in the state showing that if a standard set of rules and regulations governing the grading and packing of Oregon's fruits and agricultural products can be made a law, and further realizing that if we are to be progressive and are going to keep pace with our sister states of Washington, Idaho and Montana, we must take action right now,

Be it resolved: That the Legislative Committee be instructed to formulate grading and packing rules covering all fruits and agricultural products, that would serve the best interests of the state, the same to be presented to the next Legislature to be enacted into a State law.

Mr. Holt: You have heard the resolution which has been read.

Mr. Minton: I would like to have it read again.

Mr. Holt: Any discussion?

Mr. Allen: I would like to add in explanation of this grading law that if it is passed in the state it would be of interest to all. It should be and will be along the line of Washington's law and it does not

make it mandatory on any growers to place their crops under these grades. They can move them under any grade that they wish. It simply means that we will have established certain standards which will be recognized throughout the United States and will mean just what they say. Extra Fancy apples of certain variety will meet certain specifications. Today the words "Extra Fancy" mean nothing. Extra Fancy apples run from windfalls to perfect apples. If you care to, you may put up third or fourth grade apples as Extra Fancy, but if this word were used in the state grade, you could not use it. You could put your product up and call it anything you wanted to but the trade would leave it alone because they would insist on having state standard grades. Have you ever gone to buy a sack of potatoes and found some of them so big that you had to cut them up and some of them so little that they would fall thru the holes in the sack? This is also being standardized in the state by giving the grower a chance to put his product up in standard grades and the trade knows that he has them. If this is done, it will only be a matter of living up to the grades.

I was fortunate enough a few years ago to be with Mr. Dean and others on the Governor's committee to make an experiment to see what could be done in sales in the matter of apples and after listening to the talks at the apple shows we saw that the only hope was a standard grade and pack. Washington has carried it out. I believe that Idaho has and it is very important that this Society should put it thru.

Mr. Minton: Do Idaho and Washington have the same standards?

Mr. Allen: I think so.

Mr. Weatherspoon: The Idaho people have patterned after the Washington State, but no provision is made for the penalty so the machinery is not in perfect working order and they are having some trouble but they are trying to make it more efficient. I heartily endorse the proposition for we should standardize the apple pack of the state, because it will help to serve the public.

Mr. Minton: I heartily approve of the resolution. I have worked on this basis for a good many years. There has been quite a difference of opinion as to how this should be handled and to that end I wish that I might include that the Legislative Committee hold a conference with the market men, apple growers, etc., so that they may all work in harmony.

Mr. Holt: Are there any other suggestions?

Mr. Brown: Along this line on which Mr. Minton has spoken, I would add that it might be well to have conferences with the Legislative Committee and the associations of the state, the Oregon Growers, etc., and in that way you could get together and formulate a satisfactory arrangement. I believe that we must do that to feel sure of our ground.

The Legislative Committee, as I understand it, is composed of a very good class of hard headed business men. I understand that they may call to their aid any and all parts of the state and I think it very wise to leave the matter to the committee.

On motion the resolution was referred to the Legislative Committee.

Mr. Holt: The next number on the program is "Prune Diseases" by Professor Barss of the Agricultural College.

DISEASES OF PRUNES.

By H. P. Barss,

Plant Pathologist, Oregon Experiment Station.

Successful fruit production is one of Oregon's greatest assets but success in horticulture is not an accomplishment easy of attainment. At every step it demands the skillful application of orchard practices based upon a foundation of scientific principles. It is often the mistaken notion of those who do not know the inside facts, that fruit growing consists in planting a tree, letting nature do the rest while at the proper time the human being steps in and harvests the fruit. The planting is only the first step. From then on the orchardist must be the guardian and intelligent caretaker of the trees to help them to secure the conditions necessary to successful development and fruitfulness which nature left alone would never provide. It is his duty to foresee and meet the problems of his servants, the trees, and to protect them against the numerous enemies to which nature would otherwise surrender them. Against some of the forces of nature man is helpless, but the ability of men to unravel some of the mysteries of nature has given him some power to control or mitigate other natural agencies which constantly menace our orchards and their gift to humanity.

In considering the general problems of prune production we cannot overlook the diseases of the prune. Some of these may be controlled, some still baffle us. It is worth while, however, to understand what is known about them and to present briefly some of the possible methods which may be employed for their control. There are two classes of plant diseases which must be recognized, those caused by parasitic bacteria or fungi and those caused by unfavorable or imperfectly adjusted conditions of soil or climate which are sometimes fully as troublesome and usually far more difficult to control. It is not easy always for the grower to distinguish between physiological disorders resulting from unfavorable surrounding conditions and parasitic diseases due to organisms which are spread by infection. So entirely different, however, are the contributing causes and so different the methods which if any may be employed to prevent or remedy them that it is of importance for a grower to be able to recognize them clearly when they appear.

Of the diseases which are not the result of parasites, nearly all that are most common in Oregon are due to conditions in the orchard which cause the tree through its leaves to give off more water through evaporation than the roots can send up from the soil. Water is just

as essential to health in plants as in animals and suffering or death result from its lack. All vegetation must give off moisture by evaporation which the plant cannot prevent and this evaporation is most rapid when the atmosphere is hot and dry and breezy. It is in the summer that the rate of evaporation is most rapid and unfortunately midsummer happens to be the time when the soil in unirrigated orchards is most depleted of its supply of moisture. Trees have remarkable powers of adjustment to their surroundings but under the conditions existing so frequently in our state throughout the summer it is not at all surprising that indications of suffering from over-abundant evaporation and insufficient soil water supply should be frequently met with. Several of the resulting troubles may be briefly described here.

The leaf rolling so prevalent and conspicuous in many prune orchards in midsummer is a symptom of continued excess of evaporation over water intake, if we can judge from the observations which have been made extending over a considerable number of years. One may see this effect sometimes in trees with excessively vigorous foliage but usually in trees which show evidences of poor or restricted root growth or which are growing in soil which is shallow or which fails to retain moisture adequately. In the one case although the soil and root system are all right, the too luxuriant top gives off such an amount of moisture in hot, dry weather that the water supply from the roots is not quite equal to the demand. In the other instance the water delivered by the roots from the soil is not sufficient properly to maintain even an underdeveloped foliage. In many instances heart rots working in the trunk and limbs cut off water conduction to such an extent that in mid-season the tops suffer and show this leaf roll condition. Heart rots do not often cut off the sap flow to all parts of the tree alike so that one often sees single limbs which are showing far more extreme leaf roll with yellowing of foliage and stunting of growth than the rest of the tree. The "gum-spot" or "drouth spot" trouble has been very common in Oregon during the past few seasons, at least. It comes on just about in mid-season and appears first as watery-looking spots on the fruit. These usually swell and burst open by a crescent-shaped slit from which there is an exudation of transparent gum that hardens on the surface. In the flesh of such prunes small brown flecks always appear, beneath the gum-spot. These usually consist of a few dead pulp cells situated in the region of the outer network of veins. Such injury is often slight and the prunes mature with very little evidence of the trouble. More severe injury, however, may result in the death of large areas of the pulp. The resulting collapse of the tissues and cessation of growth produces an irregular or corrugated surface. Such affected prunes usually color up prematurely and drop off.

In some years, as the prunes approach maturity great losses to growers result from an internal breaking down of the flesh with brown discoloration and disagreeable odor which has sometimes been erroneously taken for brown rot. This internal browning usually starts immediately around the pit but often extends outward until in some cases it reaches the skin and involves the whole flesh. The trouble is not

of fungous or bacterial origin but is presumably due to disturbed water balance in the tree and perhaps is similar in origin to "punk" in the apple.

After considering the nature of these disorders and their probable contributing causes, little doubt must remain as to the direction in which growers must work if the losses due to them are to be reduced in the future. Sprays will naturally be of no avail. Only those practices will help which will tend to promote steady and healthy but moderate growth of the tree and which will tend to keep constantly available an adequate but never excessive supply of soil moisture. The object in mind must be to maintain that balance between the emission of water vapor from the leaves and the absorption of soil moisture by the roots which is essential to perfect fruit development.

Many Western Oregon sections would probably find it a highly profitable form of insurance against these troubles to introduce moderate irrigation where none is now practiced but irrigation is not a cure all, for many soils even under irrigation would not be adapted to successful fruit production. Soils incapable of satisfactory drainage like heavy clays, soils subjected to seepage, shallow soils and soils not retentive of moisture should naturally be avoided. Furthermore, careless or injudicious irrigation may easily increase rather than reduce these disorders. Each locality, however, and in fact each orchard presents its own peculiar set of conditions which must be closely studied before the most satisfactory solution of its problems can be worked out.

So much for the non-parasitic troubles. Let us now consider the disorders due to fungi. First, it might be well to face the great cause of premature old age in our prune orchards. The prune has sometimes been thought of as a short lived tree but if the infections which bring on early decrepitude and death were guarded against, its average expectation of life would be extended by many years—years of vigorous production. It would be a great thing if all owners of young prune orchards would join the life extension institute for fruit trees and guard their trees in early life and middle age against those insidious infections which are the eventual cause of physical breakdown and decay, so to speak, of the internal organs. The great offenders that must be fought off are the heart rots or wood decays.

Fungi of this sort enter through wounds caused principally by the cutting off of limbs and branches of some size, not necessarily of very large size either, or through wounds caused by cankers, freeze injury or other causes. The natural protective covering afforded by living and healthy bark is destroyed and the fungi of wood decay which are ever with us in our groves and forests gain lodgement in these unprotected places and progressing slowly but surely, work into the heart of the structure of the tree where they not only destroy the mechanical strength so as to bring about breaking down under heavy loads of fruit or under the strains of windy weather, but they also encroach on the sap carrying part of the wood and by partially cutting off the water supply cause suffering or cessation of growth or even death of parts beyond. It is easy to notice how much more an orchard

invaded by heart rots shows distress in the heat of summer than orchards whose trees have trunks and limbs that are sound.

With heart rots, cure is practically impossible. Attention must be centered on prevention. It is the duty of the orchard owner to develop his young trees with his mind looking forward years into the future. If possible the early training should be such that the necessity of later removal of large limbs will be reduced to the minimum. Where large cuts are necessary, however, an antiseptic dressing should be used and provision made for the impregnation of the exposed wood with a fungus-poison. Where cankers are formed or bark killed or removed from the framework of the tree the surface should be protected against infection. The same principles must be applied in the management of orchard wounds as are applied today in modern antiseptic surgery. The Department of Plant Pathology of the Experiment Station is now working on this problem of finding out what are the most effective and practical methods of preventing heart rot. Volck in California has devised a method which seems to have given more certain evidence of effectiveness than any other method thus far discovered, namely, the use of Bordeaux paste as a wound dressing and the impregnation of the exposed wood with copper by driving into its surface copper tacks or nails. Dr. S. M. Zeller, Associate Plant Pathologist at Corvallis, has been testing the effectiveness of this method and while a long time must still elapse before it will be possible to know just what can be expected of the method under all conditions in our orchards, yet he has found that copper tacks driven into the surface of a wood block will so sterilize the wood tissues immediately beneath the tack that one of our most energetic wood-eating species of fungi cannot live or destroy the wood in that region. Until we discover some better method, the grower will want to use this simple and reasonable method of wound antiseptics. First, use the Bordeaux paste for immediate protection and then use the copper tacks or nails for permanent sterilization of the tissues so that even when the wood surface dries out and begins to check and crack the spores of the wood rot fungi which float into the crevices will find only poisoned wood to receive them. Impervious coatings are for the most part not very antiseptic and furthermore are not considered desirable as there is a tendency for the sap and moisture to gather under such dressings and form a fine place for decay to start.

There is one orchard enemy in Oregon which takes a very large annual toll without ever assuming the form of an epidemic. It works persistently and because it eventually kills the tree whether young or old and spreads from its first victims to others adjoining it in an ever widening circle, mushroom root rot must be considered one of the great menaces to the Oregon orchard. Stone fruits in general including the prune are rather easily attacked. The original source of attack is usually the remains of the old forest roots left in the soil when it was cleared. This honey-colored mushroom (*Armillaria mellea*) is one of the chief agents of decay of buried wood in our natural forests. It is particularly aggressive on oak. It demands moist surrounding conditions or it will not maintain vigorous activity and this

is one of the facts that gives the orchard owner a chance to fight the fungus.

The symptoms above ground are just such as would occur from the destruction of the bark in whole or in part on the underground base of the tree or on its large roots. Sap-flow carrying food materials from the tops of the trees to the roots is interfered with and hence the roots cease to function properly and the tops begin to suffer from lack of water supply and show it in the curling of the leaves, the stunting of the growth, etc. Often the branch or side of the tree most directly connected with the part of the root system first attacked will show excessive fruit set but sometimes this fruit fails to mature. Sometimes girdling of the underground parts may take place within one season while at other times it may require two or three or more years before the tree is entirely killed. This depends a good deal on the size of the tree and the activity of the attacking fungus. After a tree is killed it is usual the next season, if the tree happens to be left in the ground, to see a crop of mushrooms come up around the base the following fall giving a positive indication as to the cause of death. From a tree that has been attacked the fungus spreads out in the soil and coming in contact with the roots of other trees works gradually inward to the base of the tree along the roots. As a result the adjacent trees frequently die although often several years later. This spread from tree to tree is far more dangerous in the old prune orchards than in the young ones because of the contact and overlapping of the root systems in old plantings. In California great loss is caused by the development of these widening plague-spots in the orchards of mature years. It is the part of wisdom for Oregon growers to take heed and forestall this sort of thing if possible.

When it is suspected that a tree may have root rot it should be examined at the base. The dirt should be thrown back and the bark examined all around the foot of the trunk and on the main root bases. If the tree has been attacked by the honey-mushroom decay there will usually be seen covering the outside of the bark interlacing strands of blackish color and glistening surface which are known as the rhizomorphs of the fungus. These are variable in size but often about an eighth of an inch in diameter. They branch irregularly. Sometimes these occur where a tree has not actually been attacked; in such instances, however, they arise from decaying wood in the soil near at hand. When the tree has been attacked there will be found dead bark on some portion of the tree base or large roots. This will be brown throughout except for whitish flecks of the fungus and usually there will be seen a white layer of the fungous growth lying between the bark and wood in the region once occupied by the now dead cambium. The whitish or yellowish-white growths referred to often spread out on the wood surface in a fan-like manner which is quite characteristic. The dead bark has a distinct mushroom-like odor. Where the decay has proceeded clear into the wood it will be found to have produced a very white wood rot, with here and there a delicate black line marking a certain stage in the advance of the rot.

When a tree is discovered to be attacked, the question arises as to whether it can be saved or whether it is worth saving. This will

depend on the size of the tree and on the extent of decay already present. If there is reason to believe that it will pay to save the tree, all dead and invaded bark should be carefully cut out and the wound disinfected with Bordeaux paste. The decayed chips should be removed and the hole in the earth about the tree should be allowed to remain open all summer. The tree may have to be guyed up to prevent the wind blowing it over. This drying out will prevent all advance of the fungus on the tree and will tend to kill it out in the soil immediately around the tree. The soil may later on be put back but if gravel could be put in around the tree perhaps it would help to keep conditions somewhat drier about the tree base. When a tree has been attacked one ought at once to look and remove the old root lying in the soil from which the infection originally came, if that was the source. If a tree is too far gone to save, it is the only safe thing to do to remove every particle of the root system so that the fungus will have no opportunity to continue its development in that spot. It would probably be best to leave the hole open and let the soil dry out all summer before attempting to replant. Pears are reported as more resistant than other fruit trees and may be used for replants if desired. As a safe measure of prevention, the whole orchard should be systematically watched and periodically the base of each tree should be examined as one examines for borers whenever the mushroom root rot is likely to be present or known to be present in the orchard. In this way incipient attacks may often be detected and stopped and many trees saved with little effort while if one waits until some signs appear above ground it is as a rule entirely too late to rescue the tree. In affected orchards the soil should not be ploughed up to the trees any more than can be avoided as the best means of checking the activity of the fungus is to have the soil conditions as dry as possible about the bases of the trees.

In some of our prune orchards at least in the Willamette Valley there is a leaf spot disease that shows up every now and then in serious form defoliating the trees and causing not only a reduced and inferior crop the year of the attack but also checking the new growth and bringing about a poor set of fruit the following season. This leaf spot is due to a fungus known as *Cylindrosporium*. It is carried over the winter on the old leaves of the season before and the new infections start from spores that are discharged into the air of the orchard from the old leaves in the spring and which then alight on the young prune foliage and cause small brown spots. These spots may fall out and produce a shot hole effect if the leaves are very young, but as they get more nearly full size the spots do not separate themselves from the leaves. Each spot produces a crop of new spores, many hundreds of them, and a single leaf may have hundreds of the little spots. They are often so numerous that considerable areas of the leaves are killed. Leaves attacked by the leaf spot often turn yellowish and drop off, thus depriving the tree of its food-making organs. The effects have already been referred to. The disease is worst in seasons when rainy spells favorable to infection occur rather late in the spring and into early summer or mid-summer. Where dry weather starts early in the spring and continues uninterruptedly through the rest of

the summer there is little evidence of the disease. Therefore, for several years past little of the trouble was met with but during 1920 there was again a good deal of it showed up.

Several years ago in an orchard near Salem the Department of Botany and Plant Pathology of the Experiment Station carried on some tests that showed that the disease could be controlled without injury to the foliage or fruit by spraying with Bordeaux mixture 4-4-50 about the first of May, the first of June and again the first of July. It is not all sections or all orchards which will need to spray for the trouble, but where the need arises, success may be anticipated if the work is done at the right time and with sufficient thoroughness. The old leaves ought to be turned under every year as early as possible. If they are underground before the winter buds commence to open the primary infections will then be much reduced, but in a big prune-growing section all growers ought to adopt the same practice in this respect or the neighbors will suffer from the effects of spores blown over from adjacent orchards.

Of all the plant criminals known to the fruit growing industry few have such a deservedly bad reputation as the brown rot. This disease is always with us and attacks a variety of fruits but especially the stone fruits. In the early spring it starts in with the discharge of spores from the little mushroom-like brown cups that come up from the buried mummies of prunes in the soil and sitting on top of the ground shoot volley after volley of spores into the air. These may get to the blossoms and young fruits just setting and cause blossom blight or fruit rot. Other spores are also produced from the old mummied fruits hanging in the trees. The first concern of the prune grower then is to get rid of these mummies. This is not always an easy matter. It means that prunes must not be left on the ground to decay at the end of the season. Some orchardists believe that it pays to rake up and remove the dropped worthless fruits, others employ hogs in the orchard to clean up the decaying fruit. It is said that if there are too few hogs and too many prunes the results will not be all that was anticipated. Others have suggested the use of sheep, but we have heard reports that sheep sometimes get poisoned from eating the pits. Hogs, however, seem not to be in the least affected. As for the mummies hanging in the trees, these can be got rid of at pruning time when they can easily be seen. Fire is generally the best means of disposing of such diseased material.

When the brown rot starts in the orchard in the spring it at once begins to produce enormous crops of spores which float everywhere and seek what they may devour. If weather conditions are favorable, that is, abundantly moist and fairly warm, the disease may make some headway in the spring and early summer but there has been but little trouble from this source for the last few years because of the seasons of unusually prolonged and uninterrupted dry weather. There was probably more during the past season than previously, however. It remains, however, for the approach of fruit maturity and the oncoming of the early fall period of moist weather to bring about the conditions which are most highly favorable to the disease. Spores are then produced in abundance and the conditions are ideal for

infection. It is against this last period of danger that the orchardist will seek most of all to protect himself.

Brown rot is so familiar that it hardly seems necessary to describe it here in detail more than to say that its effects are much like those of any true rot which starts with an infection and spreads into the flesh of the fruit expanding outward until the brown decay has finally reached every portion. The surface of affected fruit becomes covered with a grayish powdery dust of spores that look a good deal like an ashy velvet when closely examined. Fruit that is attacked shrivels eventually and becomes mummified. If allowed to hang on the tree it often produces crops of spores again the next spring, but if allowed to become buried in the soil the mummies produce no spores until the second spring afterward when they send up to the top of the ground the little brown fruiting cups referred to earlier. These are from a quarter to half an inch or even larger in diameter but while they are very common in most prune orchards in the spring they seldom attract attention because of their small size and inconspicuous brown color.

The problem of control for brown rot in prunes is not an easy one. In the early spring something can be done to prevent the abundant production of spores from the fungus cups on the ground by early and repeated cultivation with the harrow to break off the delicate outgrowths from the mummies and to bury the cups that have formed so that they cannot discharge spores. Then, to prevent blossom blight, one can spray with Bordeaux mixture just as the first blossoms are opening. This will give beneficial results, although all infection cannot be eliminated. This pre-blossom application has shown its value in tests conducted by the Experiment Station in Douglas county where blossom blight is sometimes destructive. Spraying might be continued at intervals through the season but so often there is so little development of the disease through the summer that the practice would only be a waste of time, labor and money. On the other hand, if brown rot does develop in the orchard during early or middle part of the growing season to an uncomfortable extent an immediate protective application of Bordeaux is much to be recommended. It is also a useful practice to go through the trees and remove by a hook on the end of a long pole such clusters of fruit as have been attacked by the brown rot. These fruits ought to be picked up and put into a small sack suspended by a strap over the shoulder and taken away and burned. Here is where a stitch in time is likely to save nine. Then as the season advances a protective covering ought to be given to the trees against the most dangerous late infection period as the fruit ripens. The experiments conducted by the Experiment Station have shown that a spray at this time will give the largest returns and the value of this protection cannot be doubted from the results which have been obtained. Bordeaux 4-4-50 is used and a spreader such as soap or casein is desirable as otherwise it will be difficult to get the spray to stick to the fruit. High power and fine mist spray should be employed for the object is to cover everything thoroughly. The work will not be easy with the foliage on, but the results will depend

on the degree of thoroughness. About a month before picking seems to be the best time for this last application.

There is a fungus that causes what is known as the Pink Bracket Heart Rot. Here is a branch of a prune tree that shows the effect of this fungus. It is called so because there is a fruiting body formed at the point where the disease centers and this is pinkish in color, very attractive to the artist but not to the grower. The result of this is to injure the wood in the center of the limb injuring the sap carrying part of the wood; it also results in the slow growth and gradual decay of all the ends of the branches. Experiments made by Dr. Zeller of the Oregon Agricultural College showed that by driving copper rivets into the wood the tree becomes inoculated with copper poison which kills the fungi.

We are now studying how successful this is, how fast it works and how far it goes. The evidence shows that it is a very simple matter for adoption. We still have a great deal to do but we now have these results. (Passes around plates showing some of the evidences of rot). You can get some idea of the effect and nature of the disease from these.

Mr. Holt: Are there any questions you would like to ask?

Mr. Minton: I would like to ask if your investigations on Brown Rot have extended to the pear and cherries.

Mr. Barss: Yes, we have studied the control of Brown Rot on the cherries, but I have had very little occasion to study it on the pears. We have made limited investigations with the cherries but results elsewhere seem to indicate that the spray given the cherries almost a month before picking time is the one to get results.

Question: When should we spray the pears?

Mr. Barss: The time to spray is just before the blooms open but we have a fungus that is difficult to control because the spores are being made during the whole period so if you would spray during the blooming period, you might control it better.

Mr. Barss: On what varieties have you found the Brown Rot, Mr. Minton?

Mr. Minton: On Bartlett pears. The pears will not ripen but they stay green and rot.

Mr. Barss: That is the trouble which I have received specimens of from a number of orchards in Oregon, Washington and California, and I have been in pear orchards that are badly affected in Douglas County but it is not due to fungi but due to the excessive evaporation from the foliage and in our experience it has come when there was a drouth.

Mr. Minton: We would hardly say that we had a drouth in the Willamette Valley this year.

Mr. Barss: The early moist condition produced a good foliage and summer came on with hot weather as you know, and under those conditions, you have a good deal more evaporation and it taxes the root system more to keep up with it. We think it is simply an improper adjustment in the water relations of the tree and after affecting some of the tree, attacks it all.

Question: Will drainage help that condition of the water?

Mr. Barss: It will help to get better conditions in the soil for the reason that a better root system means better opportunity for the tree when summer comes.

Question: Is there anything that we can mix with the spray to make it stick?

Mr. Barss: We are working on this problem but have not had much experience in using different materials with the Bordeaux paste.

Question: How close should these nails be put in?

Mr. Barss: This question is one on which we are trying to get evidence for experiments. In the work we have done you will see some indications that the sulphate has extended out from the copper rivet a distance of one quarters of an inch in some cases. This question is a little difficult to answer but from our evidence here we think that they should be fairly close together, not farther apart than one and a half inches, and we found that the copper head of the rivet gave as much protection as that from the part that was down in, so it is the extent to which the copper acts, covering the surface of the wound.

We are working on coal tar derivatives, but I would not want to say anything for them yet because while we feel that some of them are very good we want to be sure that they are safe and will not be injurious to the tree.

Mr. Holt: There are a number of subjects that we are going back to if we have time, but we must go on and pick them up later. The next number is "Results of Orchard Fertilizing" by Professor Brown of the Agricultural College.

ORCHARD FERTILIZING—PROFITABLE OR OTHERWISE

By W. S. Brown, Chief in Horticulture.

"Shall we fertilize our orchards" is a question that can only be answered by answering two more. First, can the trees and crops in our orchards be improved; and, second, how can they be bettered? If one can intelligently answer these two latter questions, he is then in shape to decide whether fertilizing will pay him or not.

Unless young trees are planted on soil much depleted by long cropping, or upon such soils that are absolutely worthless for orchard

lands, trees very seldom need any stimulation of growth before they are from five to eight years old and ready to begin bearing well. Consequently, in this discussion we are chiefly interested in the bearing tree.

The first question we must ask ourselves then is, what constitutes a vigorous tree in a condition for maximum production? Investigations carried on in recent years, chiefly at the Experiment Station of the Oregon Agricultural College, lead us to believe that the reason for maximum production lies deep down in the food supply of the tree. In other words, we have found in our investigations that wood growth and satisfactory bearing come only when there is a proper balance between the nitrogen and carbohydrates in the tree. (By carbohydrates we mean such compounds as sugar, starch, cellulose, etc., manufactured by leaves of plants by using CO₂ through the agency of sunlight working upon the chlorophyll of the leaves.

Dr. E. J. Kraus, formerly of the Oregon Agricultural College, and Dr. Kraybill worked upon this problem of the nitrogen, carbohydrate ratio, *the results of their work being published in Station Bulletin No. 149 of the Oregon Agricultural Experiment Station.

Dr. E. M. Harvey, who has succeeded Dr. Kraus in the field of research, and Mr. A. E. Murneek, his assistant, are continuing along this same line of investigation, amplifying it more and more to meet the problems of the fruit grower.

To sum up briefly the meaning of the nitrogen carbohydrate theory, and to show the influence of the proper balance between the nitrogen and carbohydrates, the following four conditions of growth may be noted.

1. N plus c. Nitrogen plentiful plus carbohydrates very limited. Result—no growth to the tree and no fruit. This condition is not found except in pot experiments where factors can be absolutely controlled.

2. N plus C. Nitrogen abundant plus carbohydrates abundant. Exuberant growth, bringing the tree into bearing late; little fruit. This is a condition usually found upon young trees before they come into bearing.

3. n plus C. Nitrogen slightly limited plus abundant carbohydrates results in a fair growth to the tree and in heavy bearing. This condition is found in practically all of our best cared for orchards that are showing vigor and regular bearing.

4. n plus C. Nitrogen limited plus carbohydrates abundant is shown by small growth of wood, weak fruit buds and little fruit. It is an easy matter for orchards that have been in bearing for some time to gradually change from condition three to condition four.

How may the orchardist discover whether his trees are in the

*Vegetation and Reproduction with Special Reference to the Tomato.

proper condition of balance or not?*

In a recent bulletin by Roberts of Wisconsin we find that he establishes a correlation between regular annual bearing and the length of fruit spur growth. He divides fruit spurs into four classes based upon length and performance. These classes of course blend more or less into each other.

1. An unfruitful fruit spur—about one-eighth of an inch annual growth on the average.
2. Spurs that blossom but do not set fruit—average annual growth three-sixteenths of an inch.
3. Spurs setting fruit—average annual growth one-half inch.
4. Long spurs producing only leaf buds—average annual growth three-fourths of an inch and over.

It should be understood at this point that Roberts was working on the Wealthy apple chiefly, and other apples may differ somewhat from this in actual measurements, though the principles are exactly the same. Roberts found that the long spurs are so well supplied with nitrogen and grow so fast that the leaves are spread over such a wide distance as to make it impossible for them to supply the spur with sufficient carbohydrates for fruit production. On the spurs in class three, while the spur is considerably shorter, more leaves are concentrated near the point where the fruit is to be formed, and consequently more carbohydrates are deposited in this region. Experiments at our Experiment Station carried on in defoliating spurs to different degrees, have proved that defoliated spurs act much in the same way. In other words, those spurs which have had their leaves taken off have lost the proper nitrogen carbohydrate balance and the spur starts to elongate but sets no fruit bud if the leaves have been removed early in the season. Dense shading of the spurs accomplishes much the same results because we know that sunlight is necessary to stimulate the growth of the leaves and to enable the leaves to manufacture large amounts of carbohydrate materials.

Another correlation noted by Roberts was between the amount of the wood growth on terminal twigs and the bearing habit of the tree. He found

1. That terminal wood growths of eighteen inches and more in length usually indicated an unfruitful tree except in trees just coming nicely into bearing.
2. Terminal growths of from twelve to eighteen inches seemed to indicate a good balance between nitrogen and carbohydrates, and a production of fruit which was abundant and regular.
3. Growths from six to twelve inches frequently meant good crops; fairly regular, but in some cases the crops tended to be rather heavy one year and light the next; or what we call "alternate bearing."
4. Terminal growths of four or five inches invariably meant weak fruit spurs and poor crops.

*Wisconsin Bulletin No. 317, Off-year Apple Bearing.

To sum up the findings of Roberts, fruitfulness and regularity of bearing depends first, upon a vigorous but not too vigorous growth of wood and fruit spurs; and second, upon a plentiful supply of fruit spurs especially upon two year old wood, so that if each spur shall bear as often as once in three years, there will be a good crop.

Now comes the second question, how can we bring about this proper balance between the nitrogen and carbohydrate factors? In looking the matter over carefully, we see that this is not accomplished in any single way, that there are many limiting factors to growth and production. I wish to take up briefly a few of these factors before considering the matter of fertilizers. In the first place, if a grower is to succeed in his orchard, whether it be with apples, pears, peaches or prunes, he must be located in a climate that is suited to the production of these fruits, upon soils that are naturally adapted to the various fruits he has in mind, upon exposures that will not allow his fruit to be dried out if he is growing berries or something of that sort, or where his fruit will not suffer from late frosts in the spring, cold winds, etc. The water drainage must be good or artificial drainage must be possible.

The above factors, every fruit grower is inclined to take for granted. Several others, however, are distinctly limiting in the growth of trees and the production of fruit. Pruning is one of the most important of these factors. After many experiments, we have found it axiomatic in pruning that the greatest stimulus in pruning comes in the immediate vicinity of the cut. Bearing this in mind, we find that the type of cutting that seems to have the greatest influence upon the formation of strong fruit buds is one that cuts out many of the small twigs and branches but does not disturb the larger branches. In doing this the light is allowed to reach the small twigs and fruit spurs and carbohydrates are manufactured to a much greater extent than in dense shade.

One phase of pruning that has been overlooked to a large extent in most orchards, is that of spur pruning. This applies to prunes as well as to apples and pears. Trees when older tend to load themselves up with so many spurs and so much spur wood that they do not have vitality enough to set fruit upon these spurs very often. In such cases, the trees can be stimulated into fruitfulness by pruning off some spurs entirely, and in other cases by cutting off branches of compound spurs. This is done in the prune by cutting out many of the little twigs that bear fruit spurs and allowing the light to enter to those left. Cutting out occasional branches of fair size in the tops allows the sunlight to penetrate the tree, and is a much better practice than to trim off so much wood at the bottom. Proper pruning then, tends toward better wood growth and greater fruitfulness.

Cultivation. This operation first of all warms the soil in the spring so that nitrifying bacteria may start their work early and supply the trees with that element which it needs most at that time; namely, nitrogen. Cultivation sets free plant food by breaking up large soil particles into smaller ones and allowing the smaller particles to become surrounded by film moisture. This moisture acts as a sol-

vent and carries the mineral elements needed for the growth of the tree to parts above.

Irrigation. Irrigation is absolutely necessary under arid conditions. The water supply acts chiefly as a solvent and takes away that amount of food which is immediately available to the upper parts of the tree. It is readily seen then that irrigation cannot take the place of cultivation. In fact, if cultivation is neglected, the soil may become cold and soggy after irrigation and spring growth be actually retarded.

Insect and Fungous Pests. It is well known that the presence of San Jose scale upon fruit trees will in a short time deplete their vigor to such an extent that they are no longer fruitful. If the pest is left too long, the tree itself may die. Apple tree anthracnose, crown gall and numerous other trouble may devitalize our trees.

Cover Crops. These crops should be plowed under at the ordinary time of plowing in the spring and before they deplete the moisture in the soil. Perhaps their greatest function lies in keeping the soil well supplied with humus. Humus adds directly to the water holding capacity of the soil, furnishes more air spaces in the soil and thus aids in warming it. With water and warmth, nitrifying bacteria become active and nitrification takes place early in the season. It has been frequently noticed by prune growers especially that early plowing, on soils that will permit it, combined with cover crops, favors the setting of large crops. Again, certain kinds of cover crops such as the legumes, afford us our cheapest supply of nitrogen. Common vetch (*Vicia sativa*) contains 3.1 per cent of nitrogen in its dry matter. It may be stated here that a ton of vetch ordinarily cured, will contain about 1500 pounds of dry matter or 45 pounds of nitrogen. This is equal to an application of 300 pounds of nitrate of soda.

Fertilizers. It is evident then, that fertilizer is only one of the limiting factors needed to produce good crops of fruit and is not a cure all by any means. In orchard management, a fertilizer is indicated only when other limiting factors are brought up to par, and still the tree appears to lack vigor and refuses to bear well and regularly. Because orchards seem to flourish year after year without any fertilizers being applied or without very much care, it is thought by some that the orchard does not deplete the fertility of the soil. Such, however, is not the case. The trees use up a great deal of plant food but get this by foraging widely and deeply. Some observations by Dean I. P. Roberts, formerly of Cornell, substantiate this point. He found that an orchard of mature trees between the ages of 13 and 33 years, used from the soil in making the roots, trunks, branches, leaves and fruits, 1336 pounds of nitrogen, 310 pounds phosphoric acid and 1895 pounds of potash. That the fertility taken out of the soil by a wheat crop, both grain and straw, in comparison for a period of twenty years amounted to 425 pounds of nitrogen, 160 pounds phosphoric acid and 110 pounds of potash. This was estimated on a basis of a yield of 15 bushels to the acre of wheat and seven pounds of straw to every three pounds of grain.

Notwithstanding this heavy depletion of fertility by the orchards we have eastern state experiment stations, including those of Geneva,

Pennsylvania, New Hampshire, New Jersey and others, that have been experimenting with fertilizers and they have found that fertilizing with potash and phosphoric acid very seldom pays for the cost of handling the fertilizers, and sometimes there are no favorable results whatever. With nitrogen, however, the results are different. They have found in all their experiments that nitrogen is the element that most quickly wears out in the soil and that trees respond to this element more readily than anything else, as a rule.

The results of fertilizing experiments in the west bear out the conclusions obtained in the east. The Oregon Agricultural Experiment Station started an experiment at Hood River in the year 1914 upon apple trees. These results are to be found in Bulletin No. 141 beginning on page 37. To quote from the introduction of the article written by C. I. Lewis, we find the following: "The results of two years' work previous to 1916, indicated no response of a practical nature by use of potash or phosphoric acid. On the other hand, encouraging results were secured from the introduction of nitrogen." These experiments were carried on for three years. From 5.2 to 6.75 pounds of nitrate of soda were used to the tree. The orchards were 19 and 12 year of age at the time of beginning. The results obtained were as follows: Leaf and terminal growth two to four times as much as growth of check plot; yields one and one-half to four times as much as found on the check trees. The fruit buds were more vigorous and the results were reflected in the next year's crop. Color was less brilliant on some of the highly colored apples after two or three heavy applications of fertilizers. Size of fruit. Nitrate increased the size of fruit greatly on the treated orchards. Maturity of crop. Check trees seemed to mature their trees somewhat earlier than the fruit matured on treated trees.

Prunes. Experiments were begun in fertilizing prunes in the spring of 1918 and have continued since. Judging from our experience with apples and from the experience of the eastern growers, we did not feel that applications of phosphoric acid and potash would be of value, and so have confined the fertilizer trials to some form of nitrogen-carrying fertilizers such as nitrate of soda or sulphate of ammonia. Nitrate of soda is the fertilizer meant in this work unless otherwise stated. The fertilizer was applied early in the spring about the first of March or the latter part of February in order that the salt might be dissolved and washed down into the roots by the rains. The salt was scattered broadcast over a strip four to five feet wide underneath the outer branches and beyond them, because the feeding roots of the trees are usually found in this vicinity for the most part. From three and one-half to five pounds of nitrate was applied per tree, depending upon the age of the tree and its size and vigor. Usually five pounds was considered a reasonable application for trees mature and of good size.

The results of these applications differed somewhat in orchards that have had different treatments. For orchards that had enjoyed good care and had not been run down we find that the terminal shoots were increased from one and one-half to two times over the terminals of the check trees, that the color of the foliage was greener,

was more leathery in texture, and less inclined to curl up in the summer time. The size of fruit was increased somewhat both in the fresh and dried stages. The drying time for fruit was the same for the treated and untreated trees. The maturity of the crop came from a week to ten days later with the treated trees than with those untreated.

In old, badly run down orchards we found much the same conditions obtained as have been noted above, except there was a much more pronounced gain in yield amounting to as much as 33 ½ per cent in some cases, while the increase in size of fruit came up to an average of 10 per cent. The maturity of the fruit was delayed fully ten days in most cases. Whether this is going to be detrimental or not remains to be seen. Some growers believe that under ordinary natural conditions the later maturity would throw the prune harvesting too late to be safe.

Some work was done on pears during the summer of 1919 but there were not enough funds available to follow this up. Some observations made on varieties fertilized at that time show us that there seems to be some benefit derived especially upon the fruit buds the following year.

Red raspberries on one large plantation at Brownsville were fertilized at a rate of 250 pounds to the acre. Great care was taken not to allow the salt to touch any of the young plants which were just coming up at the time of application early in the spring. As a result of the application in 1919, it was found that the leaves were larger and greener than those of the check plots, and that the berries were larger and had a better luster than the others. There seemed to be no objectionable softening of the fruit; perhaps a heavier application might result in such softening. Yields were increased by approximately 10 per cent. The berry vines were hurt severely by the winter, however, which shows that under some soil and climatic conditions, nitrogen must be used with considerable caution if the wood is to mature properly for winter.

It would not be right to leave this subject of nitrogen fertilizer without a word of warning to the grower. There is a decided danger in applying quick acting fertilizers like nitrate of soda or sulphate of ammonia for too long a time. If large amounts are applied to trees for three or four years hand running, there is considerable danger that these trees may be started into a heavy wood growth at the expense of fruit production; in other words, that the tree may be thrown from condition No. 3 where nitrogen is slightly limited and carbohydrates abundant, over to condition No. 2 where nitrogen is abundant and carbohydrates also abundant with resulting unfruitfulness.

Possibly a few words should be said at this place regarding mixed fertilizers. The way these are usually applied indiscriminately forms one of the easiest ways of throwing away money that can be imagined. However, in all of our tests, both in the east and in the west, we have found that the average orchard responds very little if any to applications of phosphoric acid and potash. Then, why spend good money for mixed fertilizers? If you care to find out exactly whether

your trees need phosphoric acid or potash, make application of these elements and nitrogen on separate plots, and compare them with other plots of trees unfertilized. You can then judge for yourself what materials are needed.

Mr. Barnett: I would like to ask how much nitrate should be used on young trees where the land is worn out?

Mr. Brown: New trees?

Mr. Brown: Are you just planting them?

Mr. Barnett: No, they are young and the soil is worn out.

Mr. Brown: Not more than half a ton per acre. It should be scattered underneath the branches and will be dissolved by the rains. You do not gain anything by excessive amounts.

Mr. Harlow: Would it not be possible to get the same results by annual plowing under of green fertilizer?

Mr. Brown: Personally, I think you will get better results. I believe you will remember that I said that cover crops are a source of nitrogen. Cover crops early in the spring give all the nitrogen needed.

Mr. Harlow: How about controlling the diseases where we do not plow until about the blooming season in the spring?

Mr. Brown: In regard to your cover crops, I would plow at the ordinary time in the spring. Much damage may be done by plowing cover crops late. It is a good time to sow a cover crop the latter part of August and it should be sowed with a drill one and one-half or two inches deep.

Question: Would you recommend the use of nitrate of soda on worn out soil supplementing it with a cover crop?

Mr. Brown: Not unless I found it impossible to grow a cover crop. We find orchards where it is impossible to get cover crops to start and it may be necessary to fertilize that orchard before you can get your cover crop along. Personally I like to feed nitrogen and cover crops at the same time.

Mr. Quarnberg: Is it possible to build up worn out soil with nitrate of soda?

Mr. Brown: No, it is not possible. You will have to add something else to build up the soil.

Question: Do you think the pruning shears that are in ordinary use are the best for this purpose?

Mr. Brown: There are some now advertised that are something like scissors. They make a very fine shears and they make a very smooth cut.

Question: Where do you get your nitrate of soda?

Mr. Brown: Swift & Company, Balfour-Guthrie Company.

Question: Do you know the price?

Mr. Brown: About \$75 a ton. Early in the spring it was \$80, but I think this has gone down a little bit.

Mr. Holt: Mr. Clayton L. Long of the Extension Division of the Agricultural College wishes to present a plan of work for extension of fruit growers service.

Mr. Long. Preface: Mr. Chairman, members of the Horticultural Society: You know that we have an extension service department at the Oregon Agricultural College. It is a service that will come out to the fields and bring these ideas to you in such a way that you can make use of them. We would not like to come out to the field unless we were sure that it will meet with the approval of the men we are working with. We thought it would be a mighty fine plan to take up this work as it fits in with the growers of the state and see if you gentlemen approve of it. Going out in the state without knowing what you think would be like the story of the mother whose little child asked, "Mamma, am I a descendant from a monkey?" "I don't know, Johnny, I am not very well acquainted with your father's people." And unless I can get your opinion and know what you think about it, I will not know whether or not to work with you. I would like to have the sentiment of this crowd as to whether or not you think the plan can be used.

PLAN OF WORK FOR PROJECT NO. 8 ON FRUIT GROWING. 1920

Method of Procedure.—We mutually agree to the following plan of work as provided for under "Method of Procedure" is the above project.

1. Leaders.—The State Extension Horticulturist shall assist the County Agent and County Fruit Project Committee in planning the work for the county and shall visit each county as often as is advisable to take active charge of the fruit growing work in one community and to train and advise the County Agent, Fruit Project Committee-men and Demonstrators for conducting the work in the other fruit growing communities in the county. He shall furnish instructions, blanks for keeping of records, report blanks, etc., and give general supervision and direction to the work.

2. The County Agent shall be county leader. He shall have active charge of the fruit growing work in all communities other than the one in which the Extension Horticulturist will have charge. He shall have general supervision and direction of the work in accordance of the plans developed with the Extension Horticulturist.

3. County Chairman of Fruit Project Committee.—Fruit work in organized counties will be undertaken only where the Farm Bureau (or other farmers' organization) has made it a part of its program of work. A County Chairman shall be appointed to take active charge of the fruit work.

4. **Community Committeeman.**—In communities where fruit work is approved, a Community Committeeman will be appointed to co-operate with the County Agent and County Chairman in securing a demonstrator and conducting the demonstration as outlined in this project. He shall give general supervision to all local work of this project in his community.

5. **Community Demonstrator.**—He shall conduct the Fruit Growing Demonstration according to plans furnished by the Extension Horticulturist and County Agent and assist in holding demonstrations for the benefit of the community, and keep records of all work done. These demonstrations shall be for a period of three (3) years.

Plan of Work.—Two plans of work are provided, one by means of (A) Community Demonstration Fruit Farms and one by means of (B) Educational Campaigns in which an effort will be made to reach all fruit growers on timely phases of fruit growing.

A.—Community Demonstration Fruit Farms.

The object is to demonstrate profitable fruit growing by community demonstrations, schools and demonstration meetings and spread of work.

Community Demonstrations.—Demonstrators (two or more) will be secured by the County Agent, County Chairman and Community Committeemen for fruit growing. The Demonstrators must agree to follow as nearly as practicable the directions of the Extension Horticulturist for pruning, fertilizing, spraying, cultivating, thinning, irrigating, cropping, and other general and special care of the fruit. methods of conducting the demonstrations, data of results secured, plans for securing information on fruit conditions, report blanks, etc., will be furnished by the Extension Horticulturist.

B.—Educational Campaign.

The following teaching campaign will be conducted in the organized fruit growing communities by the Extension Horticulturist in one community in each county and by the County Agent, County Chairman, and Community Committeemen in the other communities, for the purpose of reaching all fruit growers with the improved practices.

Pruning.—November, December and January, pruning schools (4 days) will be conducted in the organized fruit communities. Instruction and actual practice will be given on pruning the commercially important fruits of the community.

Fertilizing.—February and March. Instructions and demonstrations will be given on the proper fertilizers, amounts and time of application for fruits.

Spraying.—March, April, May, June, etc. Instructions and demonstrations will be given on the spraying of fruits, materials to be used and the insects and diseases to be controlled thereby.

Thinning.—June and July. Directions and demonstrations will be given on thinning fruits.

Cultivating.—February, March and April. Instruction will be given on cultural methods for our fruits.

Cover Cropping.—August, September and October. Instruction on the use and benefits of cover crops will be given. Long time demonstrations will be carried on.

Records.—The keeping of records, tabulating results and reports will be given attention in season.

Plan of Campaign.—County Farmers' Week to Organize the Work. —The Extension Horticulturist, County Agent and County Fruit Project Committee will get together during fruit day of County "Farmers' Week" to plan and organize the work in fruit growing.

Community Demonstrations.—Community Demonstrators will be chosen and three (3) year demonstrations started in all important fruit growing centers desiring the work. Field schools, demonstrations, and meetings will be held at timely seasons throughout the three (3) years. The Community Demonstrators will make monthly reports upon blanks furnished by the Extension Horticulturist. The Extension Horticulturist or County Agent will attend these community gatherings.

This "Plan of Campaign" may be changed from time to time to meet changed conditions or to introduce better methods when discovered by mutual consent of the Extension Director and the Director of States Relations Service. Such changes shall be signed by both and shall become a part of this project.

Signatures:

Date.....
	Extension Horticulturist
Date.....
	Director of Extension Service
Date.....
	County Agent
Date.....
	Chairman Fruit Project Committee
Date.....
	Community Committeeman
Date.....
	Community Demonstrator

Mr. Holt: Gentlemen, the matter is before you.

Mr. Stewart: I was over the country with Mr. Long a while back and I agree with him. It is very seldom I will do this on general work, but with Mr. Long I can absolutely agree and I think that it is the biggest thing that can be done in Lane County. God knows we need it badly enough. Every effort should be made to carry it thru.

Mr. Holt: If I understand it, the program will be eventually under the County Agents.

Mr. Stewart: No. I think the plan here was to simply incorporate the County Horticultural Society as a branch of the farmers'

movement and work to rebuild our County Horticultural Society by working to combine the two.

Mr. Minton: This seems to be a matter on which we are not very well enlightened. I will make a motion that this matter be referred to a committee of three to report this afternoon as to whether or not we shall endorse this plan.

Motion carried.

Mr. Holt: It is getting nearly quitting time but we are going to ask Professor Barss to tell us about this strawberry plant and this plant here that has such a peculiar disease that I don't know anything about.

Mr. Barss: We should be able to recognize this disease when we come across it and should take proper steps to prevent spread of the eel worm. It is so small that it requires a microscope to see it. It gets in the soil and crawls up the stem of the plant and invades it above the ground causing a good deal of destruction and if it gets on a plant when young it may prevent it from making any development at all. There is nothing to be done in the way of spraying. The only thing is to destroy all plants and allow no more berries to be grown on that soil until you are absolutely satisfied that you are not going to have that disease propagated from the soil. It is not spread as spores in the air but will spread from plant to plant because the foliage comes in contact with other plants. We do not know where it came from but it is now limited to some sections of the coast and we got it in Corvallis unfortunately by introducing different plants for making tests in experiments. We think it came from northern California. Evidently there is no chance of getting rid of it except by introducing new soil that has not had this parasite. The danger is that many are getting stock from districts where this is known, but of course the fruit inspectors should know this so that they can guard against it. We do not know how widely it is spread in Oregon but we do know that it attacks clover and spreads in clover as it does in strawberries. Professor Brown called my attention to the fact that three years' rotation on the soil is necessary. How much longer we do not know because the parasite is in the soil.

Mr. Holt: I will appoint on that committee C. I. Stewart, H. J. Funk and W. G. Allen. Some time between now and two o'clock this committee should get together and be ready to report at that time. A good many of us have no badges and I want every one to take out a membership before the session is over. If possible, take out life memberships.

Mr. Minton: This matter of disease of the strawberry plants is very important and I move you that Professor Barss be asked to write an article for our minutes so we will get a wider distribution of the subject.

Mr. Barss: I suggest that the man to write it would be Professor McKay who has been studying the subject and from whom I

have the information that I have given you. I am sure he would be glad to write up an article if you care to have it.

Mr. Minton: Then we will change to Professor McKay.

Mr. Holt: Motion is made and seconded that we ask Professor McKay to write an article to be published in the minutes of the Society.

Motion carried.

Mr. Parke: A crop pest fund of \$15,000 was formerly established and was distributed among three departments, horticulturists, plant pathologists and entomologists, whereby they could carry on their research work. Then came a time when appropriations were cut and that was cut off at that time and the college was without support for two years. The last Legislature appropriated \$15,000 per year for two years. Now every year we have to ask the Legislature to appropriate \$15,000, so I want to impress upon you that you have your representatives in the Legislature asking them to present \$15,000 to the Ways and Means committee for this fund.

Mr. Minton: I make a motion that this matter be referred to the Resolutions Committee with the power to act.

Motion carried.

Mr. Holt: The meeting is adjourned until 2 o'clock.

SATURDAY AFTERNOON

Meeting was called to order by the President, Mr. Holt.

Mr. Holt: We will try to finish in time for some of our delegates to catch the evening train. We have a very interesting program this afternoon and a very practical one. There no doubt will be a good many questions so we will move along as fast as possible.

I think it would be a good idea if we could have some kind of a machinery exhibit. Our conventions are not complete without the machinery exhibit for there are many things just as vital to us in the construction of driers and various other things as they are to the cannerymen.

We have a man with us, a practical drierman, and who has a drier which is considered a very good one.

The first thing this afternoon will be the report of the committee on resolutions. The chairman is Mr. Dosch.

RESOLUTIONS.

Whereas, our ex-Presidents, Hon. H. B. Miller and Hon. E. L. Smith are ill and unable to be present, be it

Resolved, that we sincerely regret their illness and absence and thereby are deprived of their good counsel and companionship. We hereby express our sympathy and extend to them our greetings and good cheer.

We further express our thanks to the Vice President, Mr. W. K. Newell, and Secretary-treasurer Mr. Lloyd Reynolds of the disbanded Apple Growers Association for the donation of the balance of money on hands, some thirty-six dollars.

We further desire to express our gratitude and thanks to our President, Mr. J. O. Holt, and Secretary-treasurer, Mr. C. D. Minton, for providing so splendid a program and meeting.

We further extend our thanks and appreciation to the officers and members of the Commercial Club for their hospitality and use of their halls.

And further thank the press and citizens of Eugene generally who have contributed so much for our comfort while here.

HENRY E. DOSCH,
A. C. ALLEN,
Committee.

Whereas, the last Legislature appropriated for the use of the Experiment Station of the Oregon Agricultural College \$15,000 for crop pest investigations; and,

Whereas, it appropriated \$1000 for the use of the State Horticultural Society; and,

Whereas, these appropriations do not obtain except by additional legislation; therefore,

Be it resolved, that we ask our Legislative Committee to appear before the Ways and Means Committee and see that these two appropriations are reinstated and if possible have them reinstated as continuing appropriations.

HENRY E. DOSCH.

Whereas, in the past the County Agents have been appointed mainly for their fitness in regard to dairying; and,

Whereas, practically their entire time has been given over to this industry; and,

Whereas, the horticultural interests of the state are coming more and more to the fore, not only in tree fruits, but in bramble and vine fruits; therefore,

Be it resolved, that this Society go on record as favoring a more thorough training of the County Agents in horticulture and that their time may be divided in the interests of horticulture as the surroundings demand.

HENRY E. DOSCH.

Resolutions were adopted as read.

Mr. Holt: Are there any other reports If not, we will go to the first part of the program, a paper by Mr. John McGee of Orenco on "New Prunes for the Willamette Valley."

Mr. McGee:

Preface: We are always interested in new varieties of nearly any kind and when we remember that the staple varieties today were at one time new it means that we are interested not only in new varieties but better varieties. As many of you know, I am with the

Oregon Nursery Company of Orenco and we receive a great many new fruits every year. Many of them no better and some not as good as some that are being propagated. As you know there are two new varieties of prunes now being brot forward in Oregon: the New Oregon and the Coates 1418 prune. The Coates 1418 prunes originated in California and we will take that one up first. I might say here that it is quite proper to give due credit to men who make two blades of grass grow in place of one and these men who brought about these new varieties. Mr. Atwell in his paper told us of men who have given us the present varieties of today. Possibly in twenty-five years from now the people who make up the Horticultural Society of those days will look back and point to men of our day who have contributed to horticultural interests of the state.

The New Oregon was originated by Mr. Vercler who has been identified with the prune industry of the valley for a good many years and he told me that as long ago as thirty years he has been interested in improving the prunes of this valley. With this idea in mind he has experimented on it for thirty years or more.

Some years ago Professor Lewis said that if there was a new cherry found that could escape the occasional rains that accompany the harvesting of Royal Anne cherries, it would be worth one million dollars to the Oregon growers of the state and this same thing easily applies to prunes here in the Willamette Valley. It is surprising the amount of sugar there is in the New Oregon prune, a good deal more than you would imagine. I have heard different ones speak about small prunes and big prunes and everybody seems to be wanting to get the large prunes because it seems that there is more money in them. So just by chance sometimes we start out looking for one thing and find more than we are looking for. We have found two when we were only looking for one. The Coates 1418 having originated in California will probably be more important in that state than in Oregon. It is quite evident that there is a good deal of interest in the big prunes for while we have not given these any publicity we might say that we have had a great many inquiries.

NEW PRUNES FOR THE WILLAMETTE VALLEY.

John McGee, Orenco, Oregon.

It is very proper to give credit to an individual who through his efforts can make two blades of grass grow where only one grew before, and it is equally proper that due recognition and credit be given men who through worthy ideals and persistent efforts in attaining their ideal gives to the world something better in the way of fruit than has been enjoyed before; and since I have been assigned the topic of "New Varieties for the Willamette Valley," it is quite in order that we should register our recognition of the service rendered to the horticultural industry by the men who through years of effort and fidelity to their ideal have given us the two new prunes which are here on exhibit and which I trust you have all adequately sampled.

I wish to give credit to Mr. Andrew Vercler of Salem, who is the

originator of the New Oregon prune, and to Mr. Leonard Coates of Morganhill, California, the originator of the prune marked Coates 1418.

As you probably all know, I am associated with the Oregon Nursery Company of Orenco and it is the duty as well as the privilege of nurserymen to be the medium through which these new and improved varieties are propagated and distributed to the orchardist and the public at large in turn may enjoy the best that is obtainable in horticultural lines.

No doubt many of you are acquainted with the originator of the New Oregon prune, Mr. Andrew Vercler of Salem, and will therefore know that he is a man who has been long identified with the prune industry of the Willamette Valley. It seems that as long ago as thirty years he had the idea in mind of improving the prune fruit and experimented more or less in this direction. It was not, however, until about seven years ago that his idea began to bring results. He advises us that during the year 1913 he discovered a thrifty seedling growing in a fence row along a block of Petite prune trees. This seedling grew up within about fifteen feet from one of the Petite trees. Next to the Petite trees there was a very thrifty Italian tree growing on which there was always a heavy crop of prunes. Being interested in experimental work, he preserved this seedling and brought it to bearing, and that seedling was the original wood of what we now are going to put on the market under the name of the New Oregon Prune. On account of its location, Mr. Vercler concluded that this tree is a hybrid of the Italian and Petite, which the fruit would indicate was a correct conclusion.

The fruit of the New Oregon is considerably larger than the average Italian or Petite prune. It is longer than the Italian. It is also considerably larger than the average Petite and is more full at the stem end than the Petite. It has a bloom on the fruit quite similar to the Italian but the skin proper is practically the same color as the Petite.

The tree might be termed a heavy producer and carries its fruit unusually well. It does not drop its fruit like the Italian. During the early fall or previous to harvest when the ground under the Italian tree, is usually covered with prunes that have dropped the New Oregon is practically devoid of any fallen prunes.

Another very important characteristic of the New Oregon is its ability to withstand excessive moisture. You all know the loss which attended the Italian prune crop this past fall on account of continuous rains during the harvest time. In the case of the New Oregon growing in Mr. Vercler's son-in-law's orchard in Polk County, it is safe to say that the loss on the New Oregon was not to exceed one-tenth of what the loss on the Italian was. This feature alone would have meant tens of thousands of dollars to the prune men of this valley. I believe some years ago Professor Lewis stated that if this Valley had a late cherry which would escape the rains which usually come about the ripening time of the Royal Ann, that it would be worth a million dollars to the cherry growers of the valley. He might have said the same thing, we believe, relative to the Italian prune, and if the New Oregon continues to manifest the marked improvements over the Italian which it thus far has indicated, we believe Professor Lewis'

remark will also apply to the New Oregon prune. On the matter of the New Oregon being resistant to cracking, there is necessarily some reason for this. Some might think it was on account of the skin being tougher or more elastic than other varieties, but we scarcely believe this is the reason. We rather think that it is due to the fact that this prune has a cavity around the pit and that when it is subjected to excessive moisture the expansion takes place inwardly rather than outwardly and thus the skin it not bursted.

Another favorable feature of the New Oregon is the readiness with which it dries. On account of the prune being long and inclined to be flat, it has a greater evaporating surface than is obtained on the prune that is more roundish. Personally, I have had no experience in drying prunes, but this is the claim made by men who have had a great deal of experience in this line of work, so it is presumably correct. While the New Oregon is a larger prune than the Italian, according to reports it takes no more time to dry it than it does the smaller prunes.

An analysis of the New Oregon shows that it is unusually high in sugar content; in fact even higher, we believe, than the Coates 1418, though perhaps in tasting it it might not seem so. This no doubt is due to the fact that there is more acidity in the New Oregon than there is in other prunes, which when tasting counteracts the sugar to a certain extent.

As everyone knows, it is the large prunes that bring the best price on the market and in this respect the New Oregon again leads, there being a larger percentage of prunes which will run in the 40-50 grade than in the smaller ones. Taking these two new prunes into consideration with the many improvements they hold over the best heretofore on the market gives promise that the prune growers are destined to make improvements in their line of business the same as is taking place in livestock, poultry and other lines. It is evident from the interest which has already been exhibited in these new prunes by prune men that the next few years will see many orchards planted with them, for while we have practically given no publicity as yet to these new varieties, we have had a great many inquiries and several good orders placed.

THE STORY OF EDWARD COATES, THE PRUNE IDEALIST, INVESTIGATOR, PRACTICAL FRUIT GROWER AND NURSERYMAN.

By M. McDonald, Orenco, Oregon.

Scientific observers of plant life have for a long time noted that all forms of vegetable growth have a tendency to bud variation. That is, one single isolated bud growing upon a plant, shrub or tree will have the power to produce an apparently distinct foliage, flower or fruit, seemingly being able to give new coloring in foliage, flower and new form and flavor in fruit beyond and outside of the environment of its parent stock, which variation, when transplanted to other trees of a like species by budding or grafting or by other forms of practical

propagation, will continue to produce the variation true to foliage, color, form or flower.

Wherever scientific care is practiced in the elimination of reversion to the original variety of either foliage, flower or fruit, together with careful selection of the best types of the new variation, an entirely new variety, perhaps distinct in many respects, is often the result. Usually such variations are noted because of a marked improvement in either foliage, flower or fruit over the parent variety, and when the type becomes fixed thru isolation, selection and elimination, we have a superior variety. Much work has been done in fixing the type of such variants in new foliage, flower and fruit of unusual size, form and beauty. Perhaps more work has been done in roses along this line than on any other class of plants, altho some notable work has been successfully carried on in improving valuable fruit variations. A case in point is to be found in the present uniform quality of the Navel orange, produced in the orange groves of southern California, brought to a high standard grade, quality and excellence thru repeated fruiting periods of careful bud selection from known tested trees of unusual heavy bearing strains by scientific experts of the department of agriculture.

In the case of our more highly developed forms of both flower and fruit usually nature has a tendency to revert to the original type more often than it shows an improvement. Occasionally, however, there is found a bud variation or sport that is a decided improvement on what might be termed the standard or fixed type of the variety. When such variations occur, which is rare, if observed by a person of an investigating turn of mind, the new type may be fixed and virtually a new variety established by a succession of bud propagation. The buds to be taken from the original sport or variant and carried thru several fruiting periods, each time always selecting the budding wood from the true type of the variation. Just how long, or thru how many fruiting periods this process of bud selection, isolation and elimination must be carried on before the new type or variety will become fixed, is, we believe, an unknown quantity. However, we believe it may be laid down as a well defined principle that the oftener this bud selection and elimination of the undesirable qualities is carried on in a direct line from the original variant or bud sport, the more firmly will the new type become fixed, and danger of a reversion to the original undesirable qualities of the parent stock be removed. Hence, the very present and always great danger of promiscuous cutting of budding or grafting wood from variant or bud sport until this experimental work has been done by someone conversant with the laws governing selection and elimination necessary in such cases to fix the new type.

To have spent practically a lifetime in the search for such a bud variation with the express purpose in mind all of the time to improve the quality, enhance the commercial value and standardize one of our great fruit products at its source, has been the life work and achievement of Mr. Leonard Coates of the Morganhill Nurseries of Morganhill, California.

The great work that Mr. Coates has accomplished was brought into prominence at the meeting of eminent horticulturists and scientific investigators, brought together from all over California and elsewhere on August 27, 1920, at the Morganhill Nurseries for the purpose of an annual inspection and comparison of his new prune, Coates 1418, where he has grafted ten acres to this new variety in alternate rows alongside of the best strains of the old French prune, Petite D Agen. Every facility was given the visitors to make the closest inspection and comparisons between the new and the old varieties. After a couple of hours spent in the orchard by the company, all repaired to the home of Mr. Ronald Coates, son of Mr. Leonard Coates, where a dainty luncheon was served by Mrs. Coates Jr. and able young lady assistants. At the close of the luncheon Mr. Leonard Coates gave a brief review of the discovery and the work done to bring the Coates 1418 prune to its present high standard of excellence and purity in eliminating the reversions to the old type. Discussion on the merits of the new variety was called for and almost every one present spoke in the most glowing terms of the wonderful field that this new variety would open up to the prune growers. It was at this time that Dr. Coleman, editor of the Sunsweet Magazine, the official publication of the Dried Prune & Apricot Growers Association, said: "That if all of the French prune trees now bearing in California were of the 'Coates 1418' variety, the crop from these trees this year, 1920, would have added fifteen million dollars to the growers' revenue."

Because of the differential in price on grades of the larger over the smaller sizes, the value of Mr. Coates' discovery in the Coates 1418 prune could not be better expressed than in this tremendous statement by Dr. Coleman, which should arrest the attention of prune growers everywhere to the value of this ideal large sized prune.

If, thru the isolation, selection and elimination of a single bud variation, \$15,000,000.00 can be added to the value of one state in a single year, what wonderful possibilities does this successful demonstration disclose. It surely proves that the thirty or more years Mr. Coates has spent in his quest for the ideal in French prunes have not been time thrown away or energy wasted in search for the impossible.

"Coates 1418" French Prune, as seen growing in his ten-acre test orchard at Morganhill, August 27, 1920, was surely a great revelation to the large company of invited horticulturists, who, for the first time, saw the new variety fruiting on the trees. The visitors to the Coates Nursery at Morganhill August 27th were shown ten acres that had formerly been a peach orchard. Five years ago these peach trees were grafted over with the best known strains of the French prune in alternate rows with the new variety, "Coates 1418." At the time of the meeting the trees of both the old and the new types were heavily laden with fruit. The "Coates 1418" were just beginning to drop. The visitors were told that a light picking had been made. The common French, altho nearly ripe, had not begun to drop, indicating that the "Coates 1418" is a few days, possibly a week, earlier than the ordinary French variety.

As seen in this test orchard, the habit of growth of the tree of 1418 is sturdy, upright, straight branched, with foliage larger and more luxuriant than that of the common French. Otherwise the tree is almost identical with the ordinary French, and to the average observer, without fruit on it, the tree would be taken for the regular French prune. It is only when a comparison is made with the fruit ripe on the trees of both varieties, grown alongside of each other, that the great difference in the fruit is to be seen.

In the "1418," we have a tree bearing uniformly large handsome fruit, with no tendency to bunch up or overbear, yet carrying a sufficiently heavy crop, equally distributed all over the branches of the tree. No overloading or breaking of branches as is too often the case in the old variety.

The fruit: It is when one examines the fruit that the immense possibilities of increased profits to the prune grower are apparent. "Large" is the word that expresses this new claimant in the prune world, averaging perhaps twice the size of the old French prune with no small fruits on the tree. The fruit is roundish, rather than pear-shaped, of the same royal purple color of the French. The texture of the flesh is almost identical with a much higher sugar content. So uniform in size is the fruit and of such heavy drying quality that the cured prune is more than one-half the weight of the ripe fruit, giving the grower a return that will run almost all in the twenty to thirty prunes to the pound class. It is right here that Mr. Coates has standardized the prune industry at its source. In this new variety he has eliminated the small sizes in the growing of the product, doing away with the endless work of sorting and grading necessary in the old variety to bring a small portion of the grower's crop up to the first grade of quality and standard.

In passing, it might be observed that it takes the same investment in orchard land and cultivation to grow a small fruit that it does to produce a large one. It also takes more in labor expense, while often the price per pound is less than one-half what the large sizes can be sold for.

A simple study of this new prune will easily and quickly disclose the great financial benefits Mr. Coates has conferred on the prune growers of, not only the great state of California, but elsewhere, wherever prunes are produced throughout the world.

Millions upon millions will be added to the wealth of the world thru this discovery and his subsequent work in fixing a pure strain of this new variety. What remuneration, in a financial way, can Mr. Coates get for this great, great boon to the fruit growers and his more than thirty years' work in search and experimentation to produce this ideal prune. There is no law that will protect him in his discovery. Others, no doubt, will at once begin the propagation from sources where the old type has not been eliminated by careful selection, as Mr. Coates has done with the "1418," and as a consequence, much mixture will be the result; disappointment will follow unless planters are careful in their selection of trees from the Coates foundation stock only.

The writer, knowing something of the lifetime work that Mr. Coates has devoted to the development of an ideal in the production of a superior strain of the French prune, and as one of the invited guests to the annual test examination made of this variety at the home place—Morganhill—on August 27, 1920, is impelled to set down here his impressions of the man and the great work he has done in the development of this new prune—"Coates 1418."

As co-workers in the same competitive field of nursery labor, we realize the importance and value of this new introduction to the nurserymen as well as to the fruit grower, and wish to add our quota in whatever assistance we may be able to give in the propagation, dissemination and introduction of what we believe to be the most valuable new fruit ever introduced.

It is now almost thirty years since the writer first met Mr. Leonard Coates at his home, then in Napa, Napa County, California. Well do we remember with what earnest enthusiasm he entered into the discussion of the possibility of an improvement in the size of the French prune, thru selection of variations he had noted even in that early day, and on many occasions between then and now, whenever we have had the pleasure of meeting Mr. Coates, the subject uppermost in his thoughts was the possibilities of an improvement in the French prune.

In the many years that Mr. Coates has devoted to the study of this subject, he has run down and developed many strains, some better, many of no improvement over the average type. However, we feel safe in saying that his work, without great financial reward to himself, has done much to bring about a more careful selection of budding and grafting wood of the French prune in nursery practice.

In almost every nursery catalog, where prunes are described, will be found reference to an improved French prune. While it may not be publicly acknowledged by the nursery fraternity generally, we may readily admit that this condition has been brought about largely thru the theory developed and practical work done by Mr. Coates in his thirty years of study and investigation in his search for an improved strain of the French prune.

The average nurseryman, in making his selection of budding and grafting wood, is usually content to secure his buds or grafts from what is known as good bearing trees without any attempt at bud selection or the elimination of reversions to undesirable strains of the variety. Consequently, there may be as much reversion as improvement and such selections should not be confused with Mr. Coates' expert work in the development of the "1418" prune. During all of the years of his investigations, whenever he would find what he thought was a better type of French prune, he would at once graft into bearing trees and begin the work of selection and elimination to fix the desirable type. In this ten acre orchard at Morganhill he has introduced all of the best strains of the French prune in order to have a true comparison with the "1418."

The persistency with which Mr. Coates has followed his fixed ideal thru all of the years without very great financial reward, entitles

him now, in his declining years when the shadows are lengthening and the step is not as buoyant as of yore, to not only all of the honor that will come to him because of his gift to the prune growers of the world, but he is also entitled as well to the financial reward that should naturally follow the discovery and development of such a valuable acquisition to the fruit world. Mr. Coates states that the discovery of the "Coates 1418" was brought about thru the suggestion of a friend some nine years ago who called his attention to a large variety of the French prune growing near Saratogo, Santa Clara County, California. As was his custom when hearing of anything new in the prune line, Mr. Coates at once made an investigation and found that a large prune had developed as a bud sport on a regular French prune tree. So little value had been placed on the freak, as it was termed, that the original tree was destroyed. Fortunately, some grafts had been put in another tree and in this way the variety was saved. Mr. Coates at once made arrangements for the exclusive propagating rights and began his experiment. Finding reversions in its first bearing period, it was necessary to carry on the work thru successive bearing periods. In order to give the variety an exhaustive trial, Mr. Coates bought a ten acre peach orchard, grafting over the entire acreage in alternate rows with the new variety and the best strains of the old French prune. This is the orchard that was examined by the company of expert fruit growers on August 27, 1920.

So carefully has the work of isolation, selection and elimination been carried on thru the different fruiting periods from the original tree, that there is now scarcely any noticeable reversions to be found in this ten acre orchard, and from this orchard, and this orchard only, can a pure strain of this new type of the French prune be secured. Other orchards examined, coming from the original source without the same care in selection of budding wood, show a very large percentage of the trees reverting to the old pear-shaped type of the French prune and are badly mixed. Budding wood taken from these sources will only cause endless confusion and disappointment to the orchardist.

It is hoped that out of the meeting held on August 27, 1920, there will come a call to the Fruit Growers Association of California, or some other authoritative body, to take up this matter and give Mr. Coates such endorsement and publicity as the importance of his work to the horticultural interests of California justifies and warrants.

In the November number 1919 Journal of Heredity, Professor A. D. Shamel of the Department of Agriculture, who is connected with the department at Riverside, California, gave a very lucid and scientific description of the work Mr. Coates has carried on in connection with the development of the "Coates 1418" prune. We would strongly urge every seeker for definite and reliable information on this new variety and Mr. Coates' work, to get a copy of this article as it deals with the subject in a scientific way and contains comparative illustration of great value in connection with bud variations, going carefully into the work of isolation, selection and elimination.

Professor Shamel's work at Riverside, in connection with the de-

velopment of a superior type of Navel oranges, makes his article on bud variation exceptionally interesting and instructive.

Mr. Holt: There are sample of both these prunes at the back of the room, and cooked samples of each of the new prunes for your examination. You can easily tell the different types of prunes.

Question: I would like to ask about the wood growth of the 1418.

Mr. McGee: Practically the same; you could not tell the trees apart.

Mr. Minton: Mr. President, you have cooked four of those varieties; what is the difference in cooking?

Mr. Holt: They are all cooked the same length of time and have the same amount of sugar.

The next number is a paper, "Prune Driers and Drying," by Mr. George Zimmerman.

PRUNE DRIERS AND DRYING.

By George Zimmerman.

Through the invitation of your President, Mr. Holt, I will give you a little knowledge which I have acquired through twenty years of experience and observation drying prunes.

The term Prune Drier is used in this state for a building so mechanically constructed as to dry prunes by artificial heat. There has been many styles of driers devised during the last thirty years including the Cylinder, the Stack, the Tunnel and many others. But the process of elimination of the inefficient and cumbersome methods has brought us down to the almost universal use of the Tunnel Drier in some form. And it is this style of a drier that I want to devote most of my time this afternoon. The conveniences that have given this style of a drier the place that it now holds among prune driers are as follows:

Ease and operation; no skilled mechanical help required; always ready and no adjustments; economy in operation, and simplicity in building.

Briefly, I will give you an outline of one of the driers that I built and have operated for seven seasons. This drier is 68x105 including porch and built on a side hill with 10 per cent grade and has three sections of eight tunnels each. And it will hold when filled 1150 bushels of prunes.

I have a porch for this drier 12 feet wide and full length of the building. The advantage of a porch is principally this, the fruit that comes from the orchards will keep in better condition away from heat and moisture inside the drier. As it sometimes happens with a commercial drier that fruit will have to be kept several days before drying. My scales for weighing green fruit are also placed on this porch.

Next I will consider the work space to prepare the fruit for the drier. This work space is twenty feet wide the full length of drier, giving ample room for placing the dipping machines and stacking

your trayed fruit after the drier is filled. By keeping some trayed fruit ahead you can assure a constant supply for the drier.

For dipping the fruit I use a Payne dipper and Hilficker spreader, run in series. This machine can be operated by three men, one dropping and one spreading and one to fill the drier and running thru 850 boxes in twenty-four hours.

Next I will consider the tunnels, the kiln room and the cupola. As stated before, I have three sections of eight tunnels each and two 30"x30"x8' Grant Hirats stoves to each section. Under ordinary conditions two stoves to eight tunnels are enough, but experience has proven to me that two stoves will not radiate enough heat to properly heat up the cold moist air in adverse weather conditions, and it is during these periods that we should have our driers turning out the most fruit; and in order to hold up the heat the intakes of cold air are often shut off and this will immediately stop the rapidity of evaporation. To overcome these conditions, if I were to build another drier, I would not put over seven tunnels to each stack, and two of the best stoves that I could buy; and I base by assertions on the experience that I had with drier No. 2 which I purchased and remodeled last summer. This drier has two stoves to seven tunnels and the tunnels are nineteen feet long and twelve trays high, and in this drier during the very stormy weather and cool nights the fireman was always able to keep up the heat without closing the air intakes, and the drierman was always able to take out a constant flow of dried fruit. The fruit dried in this drier in an average of less than twenty-four hours and also less drip because of free flowing of air.

The cupola should be two and one-half feet wide and should extend above the roof about eight feet with a trap door either at throat or at outlet above the roof. I prefer the door at outlet above the roof as it can be closed during the rainy season.

The spacing of the trays in the tunnel is also very important and something that I have not paid particular attention to until this year. In Drier No. 1 the spacing of the trays is six inches at bottom and one-fourth inch closer every tray higher, which leaves the top trays three and one-fourth inches apart. This is too close, as it does not allow the rapid movement of air through the tunnel. This is especially noticeable if the trays are worn and bag in the center or in very warm weather.

If I would build again, I would not put the top five trays closer than four and one-fourth inches apart. The kiln room is fourteen feet deep, this space giving a free mixing of hot air.

The next we will consider is the work space, as the fruit is taken from drier, sorted and the trays scraped. In Drier No. 1 this is about fourteen feet wide. The first six feet is used as the drierman's and sorter's working space. Next I have a long table two feet wide the full length of building which the driermen uses to stack the trays on as they are taken from the drier and allowed to cool. The sorter then comes along, sorts and scrapes the trays into an open bin just over this table, which extends the whole length of the drier and also under the drierman's working space.

There is one disadvantage to this and that is the fire insurance or fire risk on dried fruit thus stored if allowed to accumulate here. This can be overcome by sacking from bin and hauling to packing plant every day. Experience has proved to me that sacking can be done cheaper from the bin than from the sorting table. But the great advantage is that the drierman, sorters and scrapers are always free to work and do not have to handle over the dried fruit.

In summing up the things to be considered most in the construction of a drier are:

Get plenty of heating capacity for your drier.

Do not overload your stoves. Build flues large enough.

Do not put in too much pipe.

So construct your drier as to have a constant flow of hot air through the fruit. Have plenty of space to take cool air in at furnace.

Hold an even high temperature varying from 175 to 190 degrees in first tray, according to condition of fruit and flow of warm air.

Mr. Holt: Did I understand you to say that three men could tray and put in 850 bushels a day?

Mr. Zimmerman: Yes, in twenty-four hours. We have three men at night and three men during the day time; one pours, one spreads and one dries.

Mr. Holt: How much wood did you use for one ton of dried prunes?

Mr. Zimmerman: This year about one and one-half cords.

Mr. Holt: Are you using more wood where you use two stoves to seven tunnels?

Mr. Zimmerman: I do not know. Now in Drier No. 2 I have not kept an account of the wood. We have one kiln and seven tunnels and in the others two stoves to seven tunnels.

Question: What heat do you maintain?

Mr. Zimmerman: One hundred seventy-five or 180 degrees and sometimes 190 degrees.

Question: What size is your throat?

Mr. Zimmerman: Three feet, and we can close it down to eighteen inches.

Question: Do you prefer the damper at the top of the stack?

Mr. Zimmerman: Yes, it is easier to work your driers. The opening or closing can be done with one operation.

Question: As a matter of fact, do you keep the throat open three feet or eighteen inches?

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Mr. Zimmerman: It was kept open eighteen inches nearly all of the time, hardly ever over that.

Question: Do you get out a better prune in twenty-four hours than in a longer time?

Mr. Zimmerman: I think I do.

Question: How deep is your furnace room?

Mr. Zimmerman: Fourteen feet. This allows free raising of the hot air and fruit will not burn as quickly.

Question: Where do you get your cold air?

Mr. Zimmerman: From the back.

Question: What is the variation of temperature between 175 degrees or 180 degrees and that at the head of the tunnel?

Mr. Zimmerman: About 135 degrees at the head of the tunnel.

Question: What is the slope of your tunnels?

Mr. Zimmerman: Three feet in twenty-two.

Question: Is your furnace built overhead of solid concrete?

Mr. Zimmerman: Hollow tile with concrete roof. Outside of this there is brick up to the floor leaving dead air spaces.

Question: What type of furnace do you use?

Mr. Zimmerman: The Giant Hercules stove and find it the best I have ever used.

Question: Do you use one smoke stack for two sections?

Mr. Zimmerman: One stack for two stoves.

Question: Each section has an individual stack and you run your pipe underneath the tunnel making it come back to the same point in the stack?

Mr. Zimmerman: Yes.

Question: Did I understand that 850 bushels fill twenty-four tunnels twelve trays high?

Mr. Zimmerman: Yes, twelve trays high and eight trays long each tunnel holding ninety-six trays. This makes an average of twenty-six or twenty-seven hours thru the drier.

Question: Did you leave your ventilation the same all the time?

Mr. Zimmerman: No. I might close it some time.

Mr. Barnett: Have you looked at the Wann Drier at Dallas?

Mr. Zimmerman: No. I have not.

Question: Can you take a cracked prune and dry it and make it look like a good one

Mr. Zimmerman: No, but a great many cracked ones will go thru and they will be hard to find, but they will open up in the processing.

Mr. Holt: We should get all the information we can out of Mr. Zimmerman as he has had lots of experience and is the largest private prune drier in the state.

Mr. Holt: We will have a paper by Mr. Earl Percy on "Prunes."

Mr. Percy: The subject of prunes is rather a hard one to handle. Perhaps I could talk more intelligently on cracked prunes than on anything else, as we have been sorting cracked ones for two or three weeks but I am going to briefly summarize a few of my experiences with prune growers of the state.

AN ALL-STAR PRUNE ORCHARD.

By Earl Percy,

County Fruit Inspector Washington County.

This being the open season for all-star aggregations, I thought it would perhaps be appropriate to attempt to pick out an all-star prune orchard. When your secretary asked me to give my observations as a fruit insector on the subject of prune growing, I thought he was joking, for it would seem that no sane man would attempt to feature prune growing on the annual program of the Horticultural Society, after such a disastrous harvest season followed by a falling market. The average prune grower in the Willamette Valley is just now in a state of flux—not knowing whether to go ahead vigorously with his work or to mark time, so to speak.

A fruit inspector in his official capacity has ample opportunity to observe this tendency because he sees what the growers are doing in the various districts. In one place there may be a grower who is doing one thing well—say cultivation; in another district, another thing, say pruning; while a neighboring grower because of good spraying and fertilizing practices may be obtaining much better results than either of the others.

Why is it that some orchards sell for from \$1000 to \$1500 per acre while the average prune orchard will bring only \$400 to \$500? Is it location entirely, or soil, or appearance of the trees or condition of the orchard for heavy production, or is it not rather a general blending of these qualities which places the high value on an orchard?

Model Orchard.—It would be a fine thing if we could choose an orchard in each prune growing district of the state so nearly perfect that it could be labeled as a model, so that others might pattern their practices after it. As a matter of fact it would be difficult for any three prune growing authorities, such as Dr. Scarborough, Professor

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